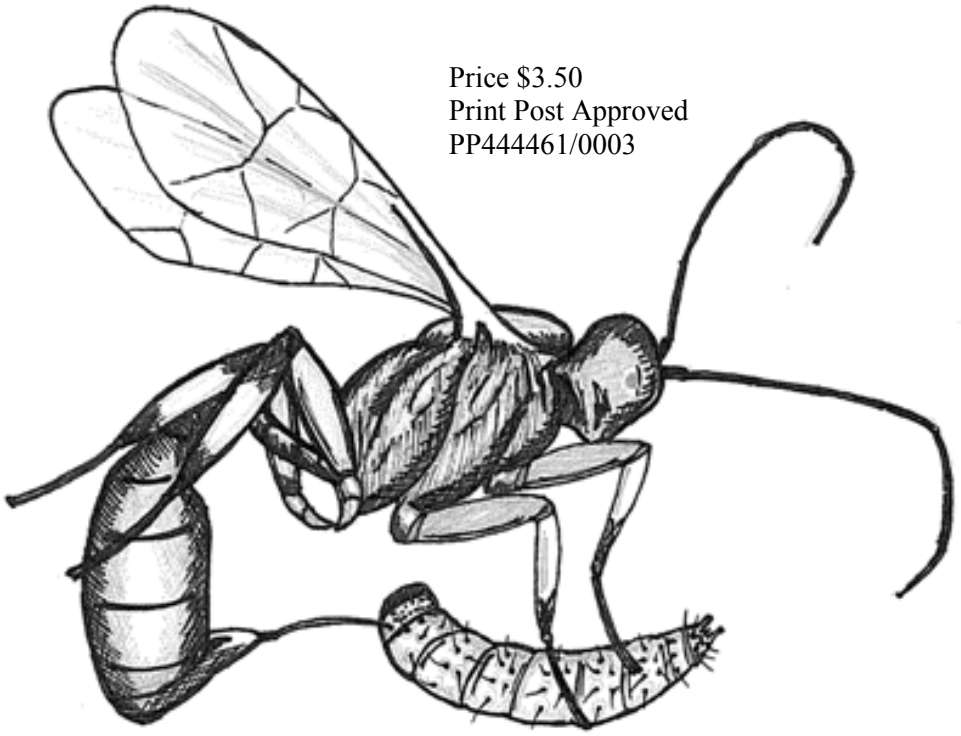
ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN



Price $3.50
Print Post Approved
PP444461/0003

Volume 36, Issue 1, March 2008

ISSN 1037-2989

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 Entomological Society of Queensland

Annual General Meeting 2008

Held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on March 10, 2008, 12.00 midday.

Attendance: Gio Fichera, Sassan Asgari, Richard Bull, Gunter Maywald, Anna Marcora, Shaun Winterton, Lyn Cook, Gary Fitt, Mike Furlong, Corinna Lange, Chris Burwell, John Lawrence, Federica Turco, Geoff Waite, Bradley Brown, Ross Kendall, Belinda Walters, Don Sands, Graham Forbes, Margaret Schneider, Desley Tree, Christine Neale, Geoff Thompson, Geoff Monteith, Chris Lambkin, Noel Starick, Peter Wilson, Judy King, John Moss, Matthew Purcell, Ken Walker.

Visitors: Lynita Howie, Bill Senior, Farah Zavakinb, John Vitkovsky, Greg Harper, Mike Crisp, Melissa Greben, Karen Bell, Andrew Hulthen, Brendan Murphy, Fereti Atu.

Apologies: Tim Heard, Mark Hunting, Stacey McLean.

Minutes: The minutes of the last Annual General Meeting, were circulated in the News Bulletin Vol. 35 Issue 1. It was moved that the minutes be accepted by Margaret Schneider and seconded Richard Bull.

Nominations and Elections:
The following nomination were received and approved by Council, and are now put before the meeting for election:

Mr. John A. Shetterly; nominated Don Sands,
seconded Gunter Maywald.
Mr. Christian H. Moeseneder; nominated Don Sands,
seconded Gunter Maywald.
Mr. G.J. Owen; nominated Don Sands, seconded Gunter Maywald.
Mr. David Bruce Hughes; nominated Noel Starick,
seconded Susan Wright.
Ms. Lynita Howie; nominated Anna Marcora, seconded Richard Bull
Mr. Alan Hopkinson; nominated Mark Hopkinson,
seconded Gunter Maywald.

In accordance with Society rules, the nominations were presented to members and elected unanimously by a show of hands.

Honorary Membership.
Geoff Monteith nominated Don Sands for Honorary Membership of the Society; seconded Richard Bull. See details elsewhere in this News Bulletin.

General Business:

Annual Reports and Financial Statements
The Society's Annual Reports and Financial Statements were published in News Bulletin Vol. 35 Issue 10. The responsible Council members (President, Secretary, Treasurer, Bulletin Editor and Journal Business Manager) each briefly outlined the content of their respective reports. There were no questions relating to the statements.

John Moss moved the reports be accepted and seconded by Chris Lambkin.

The outgoing President thanked the Council members for their contributions during the year.

Election of 2008 Council.

The following nominations were received prior to the meeting:

Senior Vice President	Chris Lambkin
Honorary Secretary	Richard Bull
Honorary Treasurer	Matthew Purcell
Editor, News Bulletin	Anna Marcora
Business Manager - Australian Entomologist	Geoff Monteith
Councillor	Peter Allsopp
Councillor	Noel Starrick
Councillor	Geoff Thompson

The Chairman called for nominations from the floor.
No other nominations were received, so the Chairman called for a show of hands in favour of the nominees being accepted. All were in favour.

Sassan Asgari, the out-going President, introduced the in-coming President, Mike Furlong to Chair the Presidential Address.

Main Business

The Presidential Address from out-going Society President:

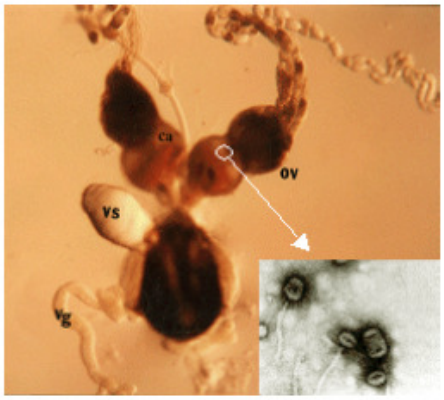
Evolutionary adaptations of parasitoids to circumvent host defences: can we take advantage of those?

Sassan Asgari
School of Integrative Biology, University of Queensland, St Lucia

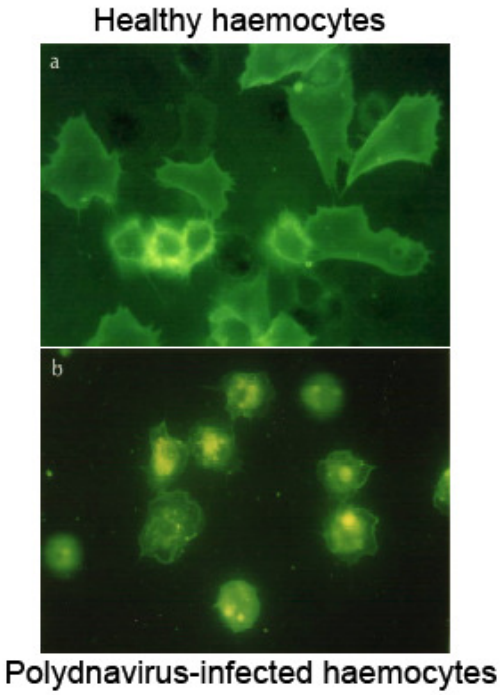
Insects are by far one of the most successful groups of living organisms on earth occupying very diverse habitats. They owe this success partly to their competent immune system which is able firstly to recognize foreign intruders and secondly give a proper response. The immune system of insects is compared to the innate immune system of vertebrates that provides a non-adaptive and to some extent non-specific response towards foreign intruders. These immune responses include phagocytosis, nodule formation and encapsulation (cellular immunity), anti-bacterial peptides, anti-coagulation factors and melanisation (humoral immunity).

Parasitoid wasps employ a variety of evolutionary adaptations to circumvent their host defences providing a suitable environment for the development of their progeny. Ectoparasitoid wasps deposit their eggs outside the host and the emerging larvae remains outside the host feeding externally. In this case, the main component introduced into the host is the venom fluid which is mostly involved in host paralysis and developmental arrest. Preliminary investigations from my lab working on *Netelia producta* (Hym: Ichneumonidae) in collaboration with colleagues in the Institute for Molecular Bioscience indicate that venom from the wasp contains neurotoxins that are active on ion channels and are being explored for their agrochemical and pharmaceutical properties.

Endoparasitoids, on the other hand, deposit their eggs inside the body of their host, therefore, being vulnerable to host immune responses. During the course of evolution, these wasps have evolved various mechanisms to overcome their hosts' immune responses. For example, by parasitizing eggs or young stages of the host in which the immune system is not well developed, depositing their egg inside the host tissue, molecular mimicry in which the egg is covered with host-like components and introduction of accessory components together with the egg. The later includes venom and/or calyx secretions, symbiotic viruses or virus-like particles. The most fascinating evolutionary adaptation of certain endoparasitic wasps, from Braconidae and Ichneumonidae, is production of virus particles known as Polydnaviruses (PDVs). These particles are produced in the reproductive organ of the female wasps in the upper part of the lateral oviducts known as the calyx region. PDVs are injected together with the egg and the venom fluid into the host at oviposition where they invade various tissues leading to a range of developmental and physiological changes in the host, most importantly, suppression of the cellular immune system. This latter effect is seen either as breakdown of the cell cytoskeleton or massive apoptosis (cell death) in haemocytes. In both scenarios, encapsulation, which is formation of a multi-cellular capsule around the parasitoid egg, is disrupted (1).



***Cotesia rubecula* female reproductive system.** Polydnaviruses (insert) are produced in the calyx region (ca). Venom gland (vg), venom sac (vs), ovary (ov).



Breakdown of cell cytoskeleton in polydnavirus-infected haemocytes. These cells (b) fail to spread and perform encapsulation response compared to control cells (a).

With advances in molecular sequencing techniques, the complete genome of several of these PDVs has been sequenced. A fascinating and unusual aspect of these genomes is that the coding capacity of these genomes is very low (17-29%) meaning that the majority of the genome consists of non-coding regions very similar to eukaryotic genomes. This has led to debates and speculations about the eukaryotic (wasp) rather than viral origin of these virus particles. Interestingly, none of the PDV genes are related to other known viral genes and they lack genes involved in the virus replication. However, there are multigene families that are involved in host regulation. Members of one of these gene families (cyc-motif) are very similar to spider venom toxins (w-atracotoxins). Feeding these proteins (as purified or expressed in genetically modified plants) to host insects leads to significant reduction in their development, formation of malformed pupae and mortality (2).

In contrast to venom from ectoparasitoid wasps, venom from endoparasitoids is not involved in host paralysis but mainly interfering with host immune system (eg. inhibition of the melanisation response (3, 4)) or enhance the efficacy of PDVs by facilitating expression of PDV genes with an unknown mechanism (5). Genetically engineered baculoviruses expressing venom proteins from *Cotesia rubecula* (Hym: Braconidae) demonstrated significant improvements in their time of kill and overall mortality compared to the wild-type virus (Asgari, unpublished data).

Teratocytes, extra-embryonic serosal cells released from hatching endoparasitoid eggs, have also been shown to secret proteins that facilitate development of the growing endoparasitoid. The secreted proteins can interfere with the host immune system or inhibit protein production in host tissues. Expression of these genes in genetically modified plants significantly reduced insect pest damage to the plants compared to control plants (6).

In conclusion, maternal factors from parasitoids introduced into the host are firstly fascinating evolutionary adaptations for host manipulation and secondly provide rich sources of biomolecules with potential agrochemical and pharmaceutical properties.

References:

1. Glatz R, Asgari S, Schmidt O (2004) Evolution of polydnaviruses as insect immune suppressors. *Trends in Microbiology* 12:545-554.
2. Fath-Goodin A, Gill TA, Martin SB, Webb BA (2006) Effect of *Campolitis sonorensis* ichnovirus cys-motif proteins on *Heliothis virescens* larval development. *Journal of Insect Physiology* 52:576-585.
3. Asgari S (2006) Venom proteins from polydnavirus-producing endoparasitoids: their role in host-parasite interactions. *Archives of Insect Biochemistry and Physiology* 61:146-156.
4. Asgari S, Zhang G, Zareie R, Schmidt O (2003) A serine proteinase homolog venom protein from an endoparasitoid wasp inhibits melanization of the host hemolymph. *Insect Biochemistry and Molecular Biology* 33:1017-1024.
5. Zhang G, Schmidt O, Asgari S (2004) A novel venom peptide from an endoparasitoid wasp is required for expression of polydnavirus genes in host hemocytes. *Journal of Biological Chemistry* 279:41580–41585.
6. Maiti IB, Dey N, Pattanaik S, Dahlman DL, Rana RL, Webb B (2003) Antibiosis-type insect resistance in transgenic plants expressing a teratocyte secretory protein (TSP14) gene from a hymenopteran endoparasite (*Microplitis croceipes*). *Plant Biotechnology Journal* 1:209-219.

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, goss, 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

Introducing our new President

Dr Mike Furlong

I first developed an interest in the biological control of insects during my degree in Pure and Applied Biology at the University of Oxford where I completed my undergraduate honours thesis on interactions between baculoviruses and their lepidopteran hosts at Oxford's Institute of Virology and Environmental Microbiology before graduating in 1987.

After making the misguided decision to train as a chartered accountant my interest in entomology prompted me to return to study at Imperial College at Silwood Park. It was during my Masters in Applied Entomology that I developed a strong interest in biological control and insect pest management in developing countries, and after completing my Masters degree in 1989 I was awarded a PhD scholarship by the Science and Engineering Research Council of the UK. I remained at Silwood for the next three and a half years and studied resistance to chitin synthesis inhibitors in the diamondback moth and its impact on their parasitoids in the Cameron Highlands, Malaysia. I was awarded my PhD in 1993.

I was then offered a post-doctoral position in the Department of Entomology and Nematology at the Institute of Arable Crop Research, Rothamsted where I was able to continue my research into the diamondback moth in Malaysia. My work focused on the ecology of the entomopathogenic fungus *Zoophthora radicans*, and I developed methods to aid its autodissemination by the diamondback moth and investigated its interactions with the pest's major parasitoids. In 1994, funded by The Royal Society, I made the first of many extended visits to the Cameron Highlands to investigate the factors contributing to *Z. radicans* epizootics in diamondback moth populations there. I also undertook fieldwork in Kenya, and together these opportunities represent the first of a number of successful international research collaborations.

The opportunity to live and work in the US prompted me take up a post-doctoral research associate position at the University of Maine (1997-1999). Here, I continued my research into the ecology of entomopathogenic fungi, studying the relationships between *Beauveria bassiana* and its host the Colorado potato beetle in the state's potato agro-ecosystems. During this time I also studied the effects physiological stress on the susceptibility of insects to fungal pathogens and successfully developed methods to increase the susceptibility of Colorado potato beetle to *B. bassiana* in the field.

By the end of 1999 the harsh Maine winters had got the better of me and I accepted a position as a post doctoral research fellow in what was then the Department of Zoology and Entomology at the University of Queensland.

This gave me the opportunity to return to research on the diamondback moth and I spent three very enjoyable years working closely with colleagues at QDPI&F and Zhejiang University investigating the effects of farm management practices on the impact of endemic natural enemies on pest populations in Australia and China. In 2003 a successful grant application to the Australian Centre for Agricultural Research (ACIAR) funded research to investigate methods to improve the management of insect pests of *Brassica* crops in North Korea; the project was extremely successful and, following its completion in 2006, is set to continue with further funding from ACIAR. In 2005 I was appointed as a lecturer in the School of Integrative Biology at the University of Queensland. I currently lead a number of large research projects on insect pest management in Fiji, Samoa and Indonesia and supervise a diverse research team with members from Solomon Islands, Fiji, Samoa and Australia. I also retain an active interest in insect pathology, and I am currently a co-investigator on two Horticultural Australia Ltd-funded projects exploring ascovirus and *B. bassiana* as potential biocontrol agents of insect pests.

Notice of Next Meeting

Monday 14th April 2008 12pm

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

Dr Paul De Barro (CSIRO)

"*Bemisia tabaci*, a global invader"

Announcement

NOTICE OF GENERAL MEETING

The next General Meeting of the *Richmond Birdwing Recovery Network* will be held from 10.30am—2.00 pm on

FRIDAY 9 May 2008

AT CSIRO LONG POCKET LABORATORIES

120 Meiers Road, Indooroopilly

The main business will be a combined address by

Dr Peter Mackey and Ted Edwards

(from 11.30am — 1 pm)

MOTHS IN THE TROPICS

VISITORS ARE WELCOME

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

Extreme variations in *Catopsilia pomona pomona* Fabricius (Lepidoptera: Pieridae) females from Dauan Is., Torres Strait, Queensland.

Murdoch De Baar, debaar@powerup.com.au

Two *C. pomona* females taken on a trip to Dauan Is., show extreme variations from what might be expected for Lemon migrants *C. pomona pomona* form *crocale*.

On 14-21 Jan. 2008, I made a trip to Dauan Is., northern Torres Strait, with Trevor & Kevin Lambkin and Ian Knight; and a few female specimens of the Lemon migrant were collected. Two females were within the expected range for *C. p. pomona* form *crocale***:** dark antennae; upper wings more heavily marked in black borders and more extensively yellowed (Braby, 2000), and one of these is illustrated on the right side of the figure. However two other females taken, had upper wings much more heavily marked (than might be expected even for form *crocale*) and had no yellow (as might be more expected for form *catilla*) (see left side specimens in figure).

Braby (2000) states that *C. pomona* is far too variable for the Australian taxa to be separated as a different subspecies from the rest of the Indo Australian Region which encompasses the distribution of *C. pomona*. These specimens certainly seem to support Braby (2000). Yata (1985) follows the separation of the species into several subspecies, including *C. p. rivalis* for Australia and surrounds. The two Dauan Is. extremes could probably fit under Yata's (1985) classification as *Catopsilia pomona flava* Butler from the Celebes. Phenotypic variations in *C. p. pomona* were also illustrated by Moss & Kendall (2006).

Conclusion:

I feel Dr Michael Braby's decision to retain *C. p. pomona* (Braby 2000) is better than splitting the species into too many subspecies (Yata 1985), after examining and comparing the specimens illustrated.

References:

Braby, M.F. 2000. Butterflies of Australia, their identification, biology and distribution. CSIRO Publishing.
Moss, J. and Kendall, R. 2006. Interesting variations in pierid butterfly adult morphology. News Bulletin, Entomological Society of Queensland, **34** (4): 67-74.
Yata, O. 1985. Pieridae. In Tsukada E. (ed.), Butterflies of the South East Asian Islands, Vol. 1. Pieridae, Danaidae. Plapac, Tokyo; 623 pp, 162pls.

Fig. Three Lemon migrants taken from Dauan Is. The two left hand specimens show extreme variation for the species in Australia.

The 2008 Mt Glorious BugCatch - 15th March

Well, we decided to hold it again. A BugCatch at Mt Glorious! In many ways we were much more successful than last year, despite the Council elections held on the same day, and continuing inclement weather. Twenty-one members, 10 visitors, and 7 University of Queensland students collected during the day and night at the old forestry barracks clearing at Mt Glorious. This was the Society's thirteenth BugCatch trip and was organized by Geoff Monteith and Chris Lambkin in conjunction with Jenny Greenland from the Environmental Protection Authority. (story continues on pg 16…)

Figures 1-6. 1. The assembled group at lunchtime, left to right. Greg, Mark Schutze, Mike Crisp, Kathy Ebert, David Merritt, Nuraini Mohd Noor, Chris and Theresa Moeseneder, Geoff Monteith, Siti Aani, Richard Zietek, Lyn Cook, Chris Lambkin, Annabel Clouston, Noel Starick, David Tenakanai, Hilal Al Shamakhi, Sam Fraser-Smith, Barbara Baehr, Cordi and Ulrich Baehr, and Tobias Erik Reiners. **2.** Cordi, Barbara, Annabel, Nuraini, Siti, and Sam busy showing what you can find in a pile of leaf litter while it's raining. **3.** Annabel photographically records David and Toby collecting the dung-baited pitfall trap sample. **4.** Everyone is fascinated to see Geoff's catch from the dung-baited flight intercept trap deep in the rainforest. **5.** Yes, there is a giant king cricket hiding there. **6.** Passalid larvae and adults (*Mastachilus quaestionis*) disturbed from their home in a rotting log. Photographs 1 by J. Greenland, 2-4 by C. Lambkin, 5 by F. Turco, 6 by N. Starick.

Barbara Baehr with her son Ulrich and his fiancée Cordi from Germany, Lyn Cook and her partner Greg, Ted Fenner, Graham Forbes, Jenny Greenland, Tony and Katie Hiller, Chris Lambkin, David Merritt and his wife Julie, Chris Moeseneder and his daughter Theresa, Geoff Monteith, John Moss, Linda Muir and her 3 daughters, Olga and Stefan Schmidt, Mark Schutze, Owen Seeman and his beautiful son Archie, Noel Starick, Federica Turco, Susan and Jeff Wright, and Richard Zietek were joined by visitors Mike Crisp (ANU, Canberra) and UQ "Insect identification and diversity (ENTM3001)" students Annabel Clouston, David Tenakanai from New Guinea, Hilal Al Shamakhi from Dubai, and Tobias Erik Reiners from Germany, and also Hilal (a student of both courses), Sam Fraser-Smith from Bermuda, Siti Aani and Nuraini Mohd Noor from Malaysia, and their tutor Kathy Ebert for David Merritt's postgraduate terrestrial arthropod course (ENTM6003).

The venue is a non-public area of excellent rainforest and wet sclerophyll on the western slopes of D'Aguilar National Park just a little beyond the public picnic area for Maiala National Park. Geoff and Noel visited the area on the 12th of March to set up Malaise traps, a flight intercept trap, and dung baited traps.

In the morning we had intermittent showers, rain, fog, and winds just like last year, but then the sun peeked through, and decided to stay. It cooled down quickly as the sun set, but the area is at 660 m elevation, and that is not unusual. The BugCatchers collected for 11 hours in a spectacular environment. The students were shown diverse methods such as sweep netting, beating, baited pitfall traps, Malaise traps, a bat guano dung trap, fruit baited transects, berlese funnels, light trapping, digging, log rolling, and direct search to obtain specimens for their courses.

While the usual dung beetles, carabids, passalids (including larvae and pupae), syrphids, large female centipedes with brood, house centipedes, pill millipedes, butterflies (including hesperiids, Macleay swallowtails and *Delias nysa*) emerged to thrill the students, some more unusual groups were collected including mosquito larvae from palm frond ponds and adult females from leg catches, mites from passalid beetles, and the giant king crickets (*Anostostoma australasiae*). Jeff Wright busily photographed insects for the upcoming Queensland Museum production 'Backyard Insects'. A list for the day will be sent to EPA.

Chris Lambkin and Geoff Monteith

Figures 7-11. **7.** It's easy to see that Richard's buprestids must fly much higher than Noel's butterflies and Chris's cetoniids. Yes, that is BLUE sky and sun! **8.** Toby takes a rest from hunting ants while Richard and Chris search for beetle larvae in the log apart behind him. **9.** You wouldn't think fallen logs would provide so much entertainment!! **10.** Despite the poor turn out at the light sheet, Mark Schutze, Hilal and David closely eye off the incomers. **11.** You can see we start them young in the Qld Ent. Soc. Archie wields a mean net. Photograph 10 by K. Ebert, remainder by C. Lambkin.

DON SANDS

NEW HONORARY MEMBER OF THE SOCIETY

Our Society has a special category of Honorary Membership reserved for those who have rendered "distinguished service to Entomology". Rules for the Society permit a maximum of ten Honorary Members at any given time. The procedure for election of Honorary Members is that Council recommends nomination to a General Meeting of the Society where a ballot is taken for election. We are pleased to announce that at the Annual General Meeting on March 10 Dr D.P.A.Sands was unanimously elected to this distinguished office.

Don's achievements in entomology can be summarized under four categories:

1. His long professional career has covered many aspects of insect ecology and phenology, particularly in its application to biocontrol. This has covered a enormous range of species ranging from scale insects and screw worm flies to fruit-piercing moths. He began with CSIRO Entomology in Sydney in 1967, the moved to Papua New Guinea in 1972 to serve with the Department of Agriculture, Stock & Fisheries, later rejoining CSIRO in that country. Leaving PNG he moved to Brisbane in 1978 for his final working years with CSIRO at the Long Pocket Laboratories, concentrating on weed biocontrol. Following his 1997 retirement, he continues there as an Honorary Research Fellow. Some of his most significant and lasting work will probably be the masterly summaries of biocontrol issues in the Australia/Pacific region which he coordinated with the late Dr Doug Waterhouse.

2. Through his career Don has pursued a private interest in butterflies, particularly the difficult blues and skippers, and the blues formed the subject of his PhD completed at the University of Queensland in 1982. He has produced landmark studies on genera such *Hypochrysops, Philiris* and *Acrodipsas.*

3. Thirdly, he has made a major contribution to insect conservation, particularly thorough his important work with Tim New on developing a management plan for the whole Australian butterfly fauna and for his enormous public community-participation project to bring back the threatened Richmond Birdwing Butterfly.

4. Lastly his contribution to this Society has been outstanding, joining in 1962. He leaves Council this year after many years continuous service. He edited the Society's journal, *The Australian Entomologist,* at the time of its difficult transfer to the Society. He has been twice President. On behalf of the Society, he successfully negotiated with the Queensland EPA both the Bug-Catch program and the Collecting Permit System, both of which have become highly effective Society activities.

Congratulations, Don, who now joins our existing Honorary Members: Dick Drew, David Hancock, Jean Harslett, Doug Kettle and Pat Kleinschmidt.

Entomological Society of Queensland

News from USDA Australian Biological Control Laboratory

Tony Wright visited Thailand in March to collect and ship a rust pathogen on Skunk Vine, *Paederia foetida*, to Florida where it is a serious pest. Matthew Purcell and Bradley Brown recently conducted surveys between Cooktown and Bowen in far North Queensland looking for biocontrol agents for the paperbark tree, *Melaleuca quinquenervia* and she-oaks, *Casuarina* spp. Ryan Zonneveld shipped leaf-feeding pyralid moth larvae to quarantine facilities in Gainesville, Florida for control of the climbing fern, *Lygodium microphyllum*.

Could you munch on bugs?

The Star, 20 February 2008, 02:47
http://www.thestar.co.za/?fSectionId=&fArticleId=nw20080219234253314C885571

Bangkok - Insects are on the menu on Tuesday at a United Nations meeting in Thailand, where experts are considering the dietary value of bugs and ways to farm the creatures which are delicacies in some countries.

While eating bugs is fodder for gross-out television shows in many countries, the UN Food and Agriculture Organisation says that 1 400 insect species are eaten in countries around the world.

Among the most popular insect munchies are beetles, ants, bees, crickets and moths, the FAO said, noting that they can be nutritious, sometimes offering as much protein as meat and fish.

The FAO organised the three-day meeting in Thailand's northern city of Chiang Mai to examine how nutritious insects are, and to discuss ways of cultivating the ones most widely eaten.

"Surprisingly little is known about the life cycles, population dynamics, commercial and management potential of most edible forest insects," said Patrick Durst, a senior FAO forestry officer.

Cultivation of insects could provide new sources of income for rural populations around the world, especially in countries like Thailand, where 200 insect species are eaten by humans, he said in a statement.

"Opportunities also exist for improved packaging and marketing to make edible insects more enticing to traditional buyers and to expand the market to new consumers, especially in urban areas," Durst said. - Sapa-AFP

Royal corruption is rife in the ant world

Public release date: 11-Mar-2008
http://www.eurekalert.org/pub_releases/2008-03/uol-rci031108.php
Contact: Jo Kelly University of Leeds jokelly@campuspr.co.uk

Far from being a model of social co-operation, the ant world is riddled with cheating and corruption – and it goes all the way to the top, according to scientists from the Universities of Leeds and Copenhagen.

Ants have always been thought to work together for the benefit of the colony rather than for individual gain. But Dr Bill Hughes from Leeds' Faculty of Biological Sciences has found evidence to shatter this illusion.

With Professor Jacobus Boomsma from the University of Copenhagen, he's discovered that certain ants are able to cheat the system, ensuring their offspring become reproductive queens rather than sterile workers.

"The accepted theory was that queens were produced solely by nurture: certain larvae were fed certain foods to prompt their development into queens and all larvae could have that opportunity," explains Dr Hughes. "But we carried out DNA fingerprinting on five colonies of leaf-cutting ants and discovered that the offspring of some fathers are more likely to become queens than others. These ants have a 'royal' gene or genes, giving them an unfair advantage and enabling them to cheat many of their altruistic sisters out of their chance to become a queen themselves."

But what intrigued the scientists was that these 'royal' genetic lines were always rare in each colony.

Says Dr Hughes: "The most likely explanation has to be that the ants are deliberately taking steps to avoid detection. If there were too many of one genetic line developing into queens in a single colony, the other ants would notice and might take action against them. So we think the males with these royal genes have evolved to somehow spread their offspring around more colonies and so escape detection. The rarity of the royal lines is actually an evolutionary strategy by the cheats to escape suppression by the altruistic masses that they exploit."

A few times each year, ant colonies produce males and new queens which fly off from their colonies to meet and mate. The males die shortly after mating and the females go on to found new colonies. The researchers are keen to study this process, to determine if their hypothesis is correct and the mating strategy of males with royal genes ensures their rarity, to keep their advantages undetected by their 'commoner' counterparts.

Entomological Society of Queensland

However, the scientists' discovery does prove that, although social insect colonies are often cited as proof that societies can be based on egalitarianism and cooperation, they are not quite as utopian as they appear.

"When studying social insects like ants and bees, it's often the cooperative aspect of their society that first stands out," says Dr Hughes. "However, when you look more deeply, you can see there is conflict and cheating – and obviously human society is also a prime example of this. It was thought that ants were an exception, but our genetic analysis has shown that their society is also rife with corruption – and royal corruption at that!"

Leaf cutting ant queen and worker.
Credit: D.R. Nash

The research was funded by the Carlsberg Foundation and carried out in collaboration with Professor Jacobus Boomsma, Director of the Centre for Social Evolution at the University of Copenhagen. It is published this week in the Proceedings of the National Academy of Sciences of the USA.

Tomorrow belongs to roachbot

March 12, 2008 - 12:03PM
http://www.theage.com.au/news/technology/tomorrow-belongs-to-roachbot/2008/03/12/1205125968917.html

Robots of the future may be able to climb up and down walls and zigzag across ceilings - and the cockroach will be the one we should thank.
One of the most reviled species in the book of life, the cockroach is also one of the most successful.
Its design, honed by 300 million years of evolution, enables it to exploit a huge range of habitat niches, and its locomotion is notoriously fast and versatile.

Entomological Society of Queensland

In a study published today, University of Cambridge zoologists Walter Federle and Christofer Clemente say they can explain how the roach (Nauphoeta cinerea) is able to effortlessly perform gravity-defying tricks.
Two tiny pads on the insect's feet are able to pull or push, enabling the critter to skip around on surfaces that are vertical or upside-down, they found.
Previous research has found that the cockroach's pads are soft and cushion-like and covered with a very thin film of oily and watery liquid, the exact composition of which remains unclear.
The film acts in the same way as a droplet of water between two glass plates, making them stick firmly together through surface tension.
The cockroach conundrum is this: pads typically stick when pulled towards the body but they detach when they are pushed.
Yet moving vertically up and down requires not only pulling but also pushing. Without these two abilities, the insect would slip.
Federle and Clemente found the secret by amputating legs from adult cockroaches, freeze-drying the limbs and examining the pads - just half a millimetre across - under a powerful electron microscope.
They then taped live cockroaches to a mount and tested the movement and force of their legs and finally used a high-speed camera to record the insects going through their paces, zipping up and down the walls of a glass tube.
The pads essentially comprise a "toe", a front part called an arolium, which is used for pulling, and a "heel," or back part, called an euplantula, which is used for pushing, they found.
The clever cockroaches use combinations of arolia and euplantulae on different feet of their six legs to compensate for the shifting forces exerted on them.
For instance, a cockroach that climbs upwards uses arolia on its front legs and euplantulae on its rear legs. But when it climbs downwards, its front legs use the euplantulae and the hind legs use the arolia.
And it can swiftly switch direction thanks to a single muscle in its claw flexor, which is relaxed during push strides and contracted during pull strides.
Thanks to this turn-on-a-dime ability, the roach can laugh as you try to swipe it with a dish towel.
In an interview with AFP, Federle said the findings could be useful for robot engineers inspired by other creatures in nature that have adhesive feet, such as the spider and the gecko.
Current bio-robots are able to climb upwards but hit big problems when it comes to climbing down.
They cannot climb downwards head-first - they have to have the same head orientation for going up or down, because their feet are designed mainly for pulling and not for pushing.
"An insect-inspired robot foot that can generate both pushing and pulling forces might help to achieve better manoeuverability," said Federle.
The study appears in Proceedings of the Royal Society B, a journal published by Britain's de facto academy of sciences. **AFP**

Entomological Society of Queensland

Moth-er of taxonomy rewarded for life work

Rosslyn Beeby The Canberra Times 06 February 2008 - 8:40AM
http://canberra.yourguide.com.au/articles/1176489.html?src=search

Codling moths, oriental fruit moths and macadamia nut borers might be cursed by Australia's farmers as orchard pests, but they've earned CSIRO entomologist Marianne Horak a new international award for excellence in taxonomy.

"I think they're gorgeous creatures. They've been a lifetime's work for me, so I tend to think of them a little possessively as my moths, and not at all as flying fruit pests," she says.

Her study of these intricately patterned, fingernail-sized moths recently impressed an international panel of judges that included some of the world's most famous names in entomology Pulitzer Prize-winning author Professor Edward O. Wilson, spider expert Norman Platnick, and British beetle taxonomist Dr Quentin Wheeler.

Dr Horak, curator of lepidoptera (moths and butterflies) at the Australian National Insect Collection at Black Mountain in Canberra, was chosen as the first recipient of the John Obadiah Westwood Medal.

The award, which honours one of the most prominent British scientists of the 19th century, was recently created by the Royal Entomological Society and the British Natural History Museum to acknowledge "the highest standards" in taxonomic research and publication.

Dr Horak received the award for her book, Olethreutine moths of Australia the first detailed reference work celebrating the biodiversity of a subfamily of 340 species of Australian fruit moths, shoot borers and leaf rollers. She will be formally presented with the specially struck engraved silver medal in July, during the International Conference of Entomology in South Africa.

"It's an incredible honour, certainly not just for my work alone, but for the insect collection in Canberra. It's one of the best in the world, and the book couldn't have happened without it."

Dr Horak's long-term research on olethreutine moths has also been critical for Australia's tropical horticulture industries. Several native moth species have become problem pests for newly introduced Asian tropical fruit crops, but little was known about them and some had not been formally described.

"There was little taxonomic knowledge of the group, and that basic knowledge of biology and distribution is the starting point for any pest-control strategy. You need to be able to identify what you're dealing with, as the first step."

Nearly all the olethreutine moths in Australia are also found in Asia, so Dr Horak's book has quickly become the standard reference work for identifying horticultural pests throughout the region.

Former CSIRO Entomology chief Professor Max Whitten persuaded Swiss-born Dr Horak to begin research on this little-known moth group shortly after she arrived in Australia in the 1980s. She named one of the 90-moth genera after him and received a congratulatory email from her former boss when the Westwood Medal was announced in London late last month. He suggested her book, now regarded as the definitive work on these moths, would still be used as key reference work in hundreds of years. "Only taxonomists are immortal," he wrote.

Entomological Society of Queensland

New Book Release:
Bugs Alive
A Guide to Keeping Australian Invertebrates

By Alan Henderson, Deanna Henderson & Jessie Sinclair

Cover of Bugs Alive (Image: Alan Henderson/Source: MV)

RRP $32.95

Published by Museum Victoria: 200pp, paperback, colour photographs, illustrations, http://museumvictoria.com.au/About/Books-and-Journals/Books/Science/New-Releases/Bugs-alive-a-guide-to-keeping-Australian-invertebrates/

Goliath Stick Insects, Giant Burrowing Cockroaches, and Desert Scorpions are just some of the fascinating invertebrates now appearing in pet shops. These amazing animals and other bugs are becoming increasingly popular as pets and as displays in schools and zoos.

This exciting new title, written by the Live Exhibits staff at Museum Victoria, is the first book on keeping Australian terrestrial invertebrates. Previously, only titles on European or American species were available. Bugs Alive contains detailed descriptions (life-cycle, breeding and feeding) of over 90 species, as well as easy to follow instructions for housing and caring for invertebrates. A wide range of terrestrial bugs are covered, including spiders, scorpions, centipedes, beetles and butterflies. Stunning colour photographs and detailed line-art feature extensively throughout the book to describe animals and their anatomy, as well as to depict types of housing, feeding methods and ideas for display.

Alan Henderson is coordinator of the Live Exhibits Unit at Melbourne Museum. He developed and managed the Australian Nature Education Centre, earning him the Young Australian of the Year regional development award in 1998.

Deanna Henderson is a senior animal keeper at the museum and her fascination with all things small developed during her project work with butterflies at the Melbourne Zoo. She has become internationally recognised for her work on keeping cockroaches in captivity.

Jessie Sinclair is also a senior animal keeper at the museum and her early invertebrate work started with ant conservation in plantation timbers, and has developed into interpretive education and husbandry. Jessie's invertebrate interests are broad, ranging from aquatic through to terrestrial creatures.

Entomological Society of Queensland 2008
$250 Student Award

This is an award by the Society to encourage entomological research. Entries are judged by a panel of 3 entomologists appointed by the President of the Society. The winner will be announced at the May General Meeting and is then invited to present a summary of their research at the June Notes and Exhibits meeting of the Society.

Honours, Diploma and 4th year Degree students at any Queensland tertiary education may submit their thesis or report on an entomologically related topic examined during 2007 or 2008 for the judging of this award.

Entries need not be Society members.

These reports should be directed to the Society's Secretary at the address listed on the back of the cover of the News Bulletin. Closing date for submissions is 30th April 2008.

Student Award Sponsors:

Tropical Fruit Fly Research Group, Griffith University

ENTOMOLOGICAL SOCIETY OF QUEENSLAND
2008 STUDENT AWARD
ENTRY FORM

Name:

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Degree

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Signature_____Date:_____

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The Secretary, Entomological Society of Queensland

PO Box 537 Indooroopilly 4068 Brisbane Qld.

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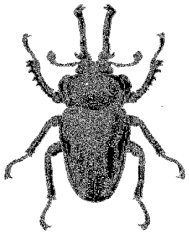

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Yours sincerely,

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DIARY DATES 2008

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

April 14th	Dr Paul De Barro (CSIRO Ento.)	*Bemisia tabaci*, a global invader
May 12th	Dr Lyn Cook (University of QLD)	Biology & evolution of Australian gall-inducing scale insects
June 10th	Student award, 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	Dr Felix Bianchi (CSIRO Ento.)	The landscape context of the ecosystem service of pest control
November 10th	Professor Hugh Dingle (University of QLD)	
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

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See subscription form on opposite page for details.

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NOTICE OF NEXT MEETING

The next meeting of the Society will be held at **12:00 pm** on **Monday**, **14th April 2008** in the **Large Conference Room**, **CSIRO Long Pocket Laboratories**, 120 Meiers Rd Indooroopilly. The main business will be a presentation by **Dr Paul De Barro : "*Bemisia tabaci*, a global invader".** Refreshments will be served before the meeting, with a gold coin donation required. No donation is required to attend the talk alone.

VISITORS ARE WELCOME

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

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