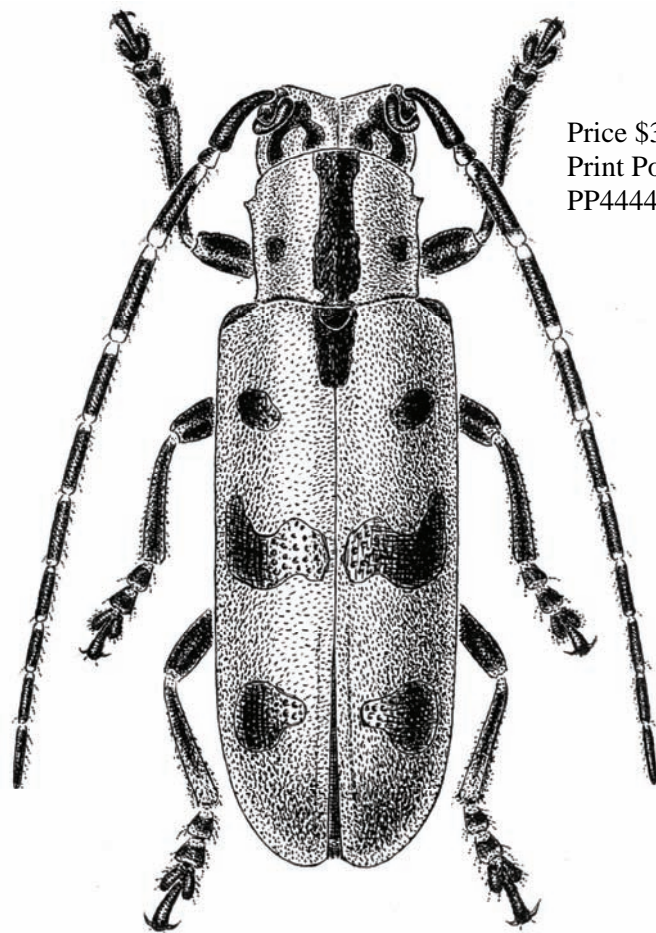




ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC NEWS BULLETIN



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THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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THE AUSTRALIAN ENTOMOLOGIST

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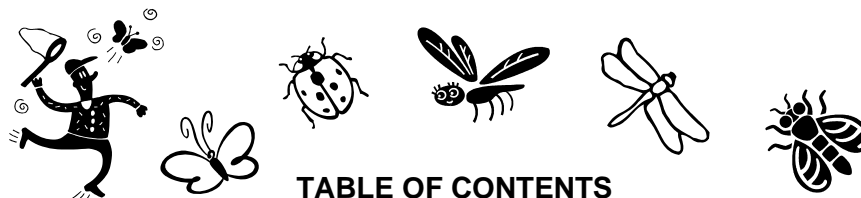
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Front cover illustration: Habitus of *Zygrita diva* Thomson (Coleoptera: Cerambycidae), the lucern crownborer—artist William Manley, scanned from original illustration ©Queensland Department of Employment, Economic Development and Innovation

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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. 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. Membership is open to anyone interested in Entomology.

Contributions to the *News Bulletin* such as items of news, trip reports, announcements, etc are welcome and should be sent to the News Bulletin Editor.

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

EMBLEM: The Society's emblem, chosen in 1973 on the 50th anniversary of the Society, is the king stag beetle, *Phalacrognathus muelleri* (Macleay), family Lucanidae (Coleoptera). Its magnificent purple and green colouration makes it one of the most attractive beetle species in Australia. It is restricted to the rainforests of northern Queensland.

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.

Minutes of General Meeting

Held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on Monday August 9, 2010.

Chair: Lyn Cook.

Attendance: Richard Bull, Lyn Cook, Murdoch De Baar, Gio Fichera, Ross Kendall, Judy King, Chris Lambkin, Lance Maddock, Anna Marcora, Gunter Maywald, Penny Mills, Don Sands, Nancy Schellhorn, Desley Tree, Geoff Thompson, Richard Zietek.

Visitors: Luke Ambrose, Cassie Jansen.

Apologies: Gary Fitt, Stacey McLean, Geoff Monteith, Matthew Purcell, Federica Turco.

Minutes: The minutes of the last General Meeting were circulated in News Bulletin Vol. 38, Issue 4, June-July 2010.

Moved the minutes be accepted as a true record: Chris Lambkin.

Seconded: Desley Tree.

Nominations for Membership:

The following nominations for general membership were received and approved by Council, and are presented for election:

Mr Michael J. Barnett, Corinda Qld. Nominated GR Forbes, seconded Greg Daniels.

Mr Hermes Escalona, CSIRO, Canberra. Nominated by Geoff Monteith, seconded by Matt Purcell. Nominees were elected unanimously by show of hands.

General Business:

1. The Treasurer again reminded members that membership fees are due.
2. Collecting permits - Chris Lambkin has sent out 85 collecting permits, as PDFs or hard copy, and received 65 responses. If members have not received a permit to which they are entitled they should contact Christine.

Main Business

Impacts of established natural enemy assemblages on an invasive pest, the soybean aphid, in North America.

Alejandro C. Costamagna, CSIRO Ecosystem Sciences

Ecologists have long been interested in understanding the relative strength of top-down and bottom-up forces in shaping natural communities. However, these control forces are poorly studied in agroecosystems, where most pests are exotic invasive species. Moreover, ecological studies have also shown that strong top-down control can result in a trophic cascade of increased plant biomass and yield, which is the ultimate goal of biological control programs in agroecosystems. We use soybean and the soybean aphid *Aphis glycines* Matsumura (Hemiptera: Aphididae) as a model system to test these ecological processes in agroecosystems. *Aphis glycines* is native to Asia and has become an important invasive pest in North America. It was observed for the first time in North America in 2000 and has expanded its distribution throughout the soybean producing region, including both the U.S.A. and Canada, becoming the most important insect pest of this crop. Yield losses due to *A. glycines* in the range 50 – 70% have been reported in Asia, and up to 40% in the U.S.A.

First, we conducted a field study at the Kellogg Biological Station Long Term Ecological Research site in agroecology, where we contrasted *A. glycines* establishment and population growth under three agricultural production systems that differed markedly in disturbance and fertility regimes. Agricultural treatments consisted of a conventional-tillage high-input system, a no-tillage high-input system, and a zero-chemical input system under conventional

tillage. By selectively restricting or allowing predator access we simultaneously determined aphid response to top-down and bottom-up influences. Irrespective of predator exclusion, our agricultural manipulations did not result in bottom-up control of *A. glycines* intrinsic rate of increase or realized population growth. In contrast, we observed strong evidence for top-down control of *A. glycines* establishment and overall population growth in all production systems (Costamagna and Landis 2006).

We then conducted a factorial field study to test the separate and combined effects of predators and parasitoids. Specifically we combined ambient levels of generalist predators of *A. glycines*, with controlled releases of the native parasitoid *Lysiphlebus testaceipes* and measured their impact on aphid population growth and soybean biomass and yield. We found that generalist predators provided strong, season-long aphid suppression, which resulted in a trophic cascade that doubled soybean biomass and yield. However, contrary to our expectations, *L. testaceipes* provided minor aphid suppression and only when predators were excluded, which resulted in non-additive effects when both groups were combined. We found direct and indirect evidence of intraguild predation (IGP) of coccinellids on the parasitoid, but because percentage parasitism did not differ between predator exclusion and ambient predator treatments, we concluded that IGP did not disrupt parasitism during this study (Costamagna et al. 2007a).

During 2004 and 2005, we used a similar approach to test the impact of different guilds of natural enemies on *A. glycines*. We contrasted aphid abundance on field cages with ambient levels of small predators (primarily the anthocorid bug, *Orius insidiosus*) and parasitoids (primarily Braconidae), sham cages and open controls exposed to large predators (primarily coccinellids), and cages excluding all natural enemies. We observed strong aphid

suppression (86- to 36-fold reduction) in treatments exposed to coccinellids, but only minor reduction due to small predators and parasitoids, with aphids reaching rapidly economic injury levels when coccinellids were excluded. Three species of resident parasitoids were found attacking *A. glycines* at very low levels (<1% parasitism), with no evidence that intraguild predation by coccinellids attenuated parasitoid impacts. At the plant level, coccinellid impacts resulted in a trophic cascade that restored soybean biomass and yield, whereas small natural enemies provided only minor protection against yield loss (Costamagna et al. 2008).

In 2005, we conducted 72 h of direct observations of predation on natural populations of *A. glycines*. A total of 643 predators within 12 groups and 211 predation events were observed. Transient predators such as the coccinellids *Harmonia axyridis* and *Coccinella septempunctata* accounted for most of the observed mortality and were very effective on a per capita basis, despite relatively short residence time in the observed patches. Transient predators responded positively to increased *A. glycines* field densities. Resident predators, particularly *O. insidiosus*, were abundant and accounted for many predation events, but they were not as effective on a per capita basis and did not respond to changes in aphid density. We concluded that coccinellids exerted most of the mortality observed and have the potential to rapidly respond to changes in aphid density with high per capita rates of predation (Costamagna and Landis 2007).

We then developed a mathematical model to better understand the factors affecting *A. glycines* population growth. Our model successfully predicted aphid field populations in the absence of predation, suggesting bottom-up controls of plant age on aphid growth (Costamagna et al. 2007b, Matis et al. 2009). However, it failed to predict the impacts of predation demonstrated in field

have additional indirect, non-consumptive, impacts on aphids. Using field cages and quantifying the impact of predation, we found a significant shift in the within-plant distribution of the aphids towards lower portions of the plant in the presence of generalist predators (Costamagna and Landis in review). Previous research on other aphid species suggest that population growth rates on older plant parts are lower than on younger tissues. Thus, if predators remove aphids selectively on the plant parts with higher quality, this will result in an additional indirect, non-consumptive impact on aphid population growth rates. To test this potential effect, we conducted field studies varying predator access to the top versus the

bottom of the plant with exclusion cages, and plant quality by varying planting dates. By manipulating these factors in a factorial design, we tested 1) the relative strength of top-down versus bottom-up controls of aphid population growth rates, 2) the relative strength of top versus bottom predation, and 3) the quality of different plant parts at different plant ages for aphid growth. In addition to strong direct consumptive effects of predation, our results also suggest significant indirect reductions of aphid population growth rates as a consequence of higher predation on the top of the plant, removing individuals from high quality resources (Costamagna et al. in preparation).

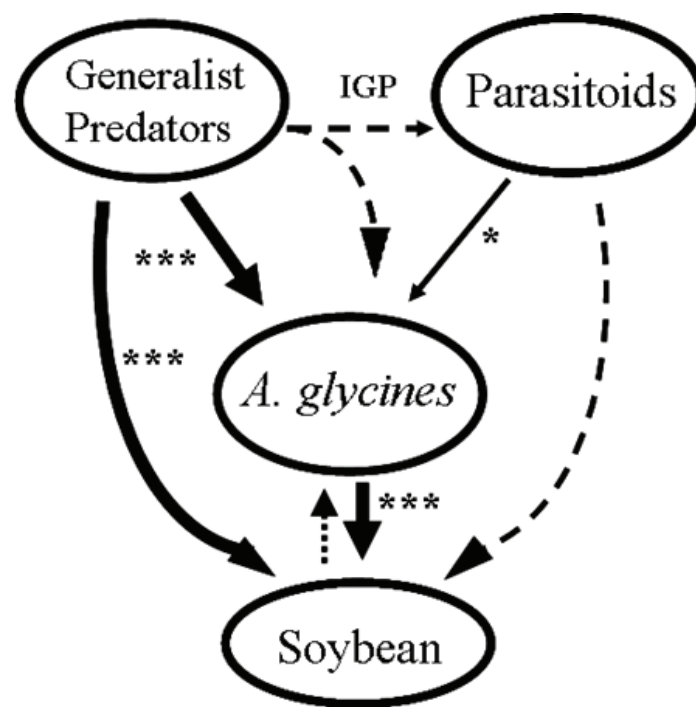


Fig. 1. Summary of interactions between *A. glycines* and its natural enemies. Straight lines indicate direct effects, curve lines indicate indirect interactions. Line size is proportional to the effect, dashed lines are not statistically significant, asterisks indicate level of significance. IGP = intraguild predation.

The studies presented here have multiple implications for the Integrated Pest Management of *A. glycines*. First, we found no evidence that manipulating agricultural techniques will affect aphid populations through bottom-up processes. Second, generalist predators can exert strong top-down control on *A. glycines*, resulting in a trophic cascade that protects soybean yield. Third, the current minimal levels of parasitism observed are more likely due to lack of adaptation of existing parasitoids to *A. glycines*, with very little evidence of disruptive intraguild predation by coccinellids. Fourth, transient predators, represented mostly by mobile stages of coccinellids, have the potential to suppress increasing populations of the aphids by increasing their residence time, abundance, and feeding rates in aphid patches. Fifth, predators also have indirect impacts on *A. glycines* by restricting aphid within-plant distribution to lower nodes of inferior nutritional quality for the aphids. In summary, we conclude that successful management of *A. glycines* needs to incorporate and enhance the impact of generalist natural enemies.

Acknowledgements

This work was part of a Ph.D. program under the direction of Doug Landis (Michigan State University) and post-doctoral studies under the supervision of Dave Ragsdale (University of Minnesota), to whom I am very grateful for their generous support.

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Vote of Thanks: Christine Lambkin.

The Chair advised members that the next General Meeting will be on Monday September 13 at 12 noon at CSIRO. The speaker will be Don Sands (CSIRO Research Fellow): 'The role of insects in the breakdown of leaf litter and its implications for fire management and weed control'.



Notice of Next Meeting

Monday 13th September, 2010, 12pm

~

**‘The role of insects in the breakdown of
leaf litter and its implications for fire
management and weed control’.**

a presentation by

Dr Don Sands

CSIRO Research Fellow

~

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

ALL WELCOME

(please sign in at reception before meeting)



People and Projects

News from USDA ARS Australian Biological Control Laboratory.

Jeff Makinson and Bradley Brown have been in Hong Kong collecting stem-boring pyralid moths attacking *Lygodium*

microphyllum. These insects will be used to establish a quarantine culture for further evaluation as a biocontrol agent for this plant which is a troublesome weed in Florida. Anne Marie McKinnon joined the team in August to lend a hand with the impending move to the new Boggo Road facilities and will assist with genetic characterisation of some insect groups of interest. Gio Fichera has also moved from part-time (shared position with Tropical Weeds) to full time with the team for the next 4-5 months. Gio's vast experience with plant culturing and his extensive experience in biocontrol of weeds is a major bonus for our research program.

News from School of Biological Sciences (BIOL), University of Queensland

The big news at UQ BIOL recently has been the announcement by **Scott O'Neill** that he and his lab will be moving to Monash University, Melbourne, from the middle of next year. Accordingly, Scott stepped down as head of BIOL on August 6th and Mark Blows is now acting HOS.

Sheree Osborne (Karyn Johnson's lab) and **Rebecca Morley** (Dave Merritt's lab) received Honours (1st Class) in the latest cohort of BIOL students. Sheree's thesis was on the distribution and density of *Wolbachia* in *Drosophila simulans* and their effect on virus infection. Rebecca's thesis was on the effect of light on bioluminescence in the glow-worm *Arachnacampa flava*. Sheree is now working as an RA in Karyn's lab and Rebecca is back to business as manager for Entomology Curriculum Australia.

Karyn Johnson and **Sassan Asgari** attended the conference of the Society of Invertebrate Pathology in Trabzon, Turkey, in July. Reports are that it was packed with very interesting sessions and a good time was had by all. Back in Australia, Karyn is now coordinating a new third level entomology course in BIOL this semester called "Applied Insect Biology". It is a "capstone" course for students specialising in insect science. Entomology is undergoing an expansion in BIOL this year, with about 65 students undertaking the second level "Insect Science" course coordinated by Dave Merritt.

Two new PhD students have recently taken up their PhD scholarships with **Mike Furlong**. **Rini Murtiningsih** is a John Allwright Fellow from Indonesia and will work on the ecology and management of *Crocidolomia pavonana* in the highlands of West Java. **Alana Danne** is the recipient of an

Australian Postgraduate Award and will study the ecology and management of fruit spotting bugs in macadamia orchards in SEQ and northern NSW. In early August, **Mike Furlong** visited field research sites in Fiji and began a 3 month training program on farmer field schools (FFS) with Ministry of Agriculture extension officers. The work is in collaboration with Budi Christiana from Indonesia and will serve to promote the implementation of IPM practices in Fiji and Samoa.

Scott Fabricant (Macquarie University) visited the UQ insect collection in August to gather distribution data for his PhD project on the harlequin bug (hibiscus bug), *Tectocoris diophthalmus*.

Insect in Public Art - The Cairns Connection

Geoff Montieth, Queensland Museum

We've been running notes on examples of insect imagery being used in public art in the Brisbane area. At present an unusual piece of insect art is on show until September 5 in Cairns in the far north. One part of the Cairns Festival each year is "Esplanart" where selected artists are invited to mount an art work on the beautiful Cairns Esplanade where thousands of tourists and locals promenade along the waterfront every evening. This year, for "Esplanart 2010", Buck Richardson, a well-known digital artist and personality from Kuranda, was invited to contribute. Buck has had, as he calls it, a "moth-ers obsession" with Lepidoptera for several years and has developed a fabulous website at <http://www.leapfrogoz.com.au> where he has brilliant photographs of more than five hundred species of living moths which he has encountered in the Kuranda area - all accurately named with the help of his entomological friends. But then Buck's fertile imagination (he's a lapsed engineer) takes over and he has used the computer to



Composite image of six street light poles (one shown from two angles) on the Cairns Esplanade adorned with Buck Richardson's giant, cut-out vinyl images of moths of the Wet Tropics World Heritage Area. About half of the 100 moths in the art work are visible. (Photo: Buck Richardson)

manipulate the moth images into fantastic designs and patterns and these can be bought in the form of silk scarves, wall plaques, posters and three dimensional objects.

For "Esplanart 2010" Buck calls his piece "100 Rich and Famous Tropical Queenslanders" and, as he describes it in his own words: "I made 100 rich - in colour and pattern - and famous - found in the World Heritage Area - moths from my collection. They are digitally printed on to vinyl, laminated and then mounted on acrylic which I jigsawed to shape. They are attached to six street light poles next to the iconic lagoon on the Cairns Esplanade. The moths are, of course, much bigger than life size."

Katydid book launch in Cairns

Geoff Monteith, Queensland Museum

On a perfect, sunny, winter morning in the Cairns Botanic Gardens on August 17, a book launch was held for David Rentz's

delightful new book, *A Guide to the Katydid of Australia* (CSIRO Publishing, ISBN 9780643095540). It is the latest in the series of popular insect handbooks being produced by CSIRO Publishing. About 40 people attended the event and enjoyed a morning tea afterwards. MC for the session was Gary Wilson, plant ecologist with the Queensland Herbarium, and who has some insects in his background concerning his studies on insect pollination of the cycad genus *Bowenia*. The book was officially launched by Peter Shanahan, Information Officer at the Gardens, and whose earlier life adventures included insect collecting in Papua New Guinea in the 1960s and 1970s for the Bishop Museum field station. Dave Rentz, the author, responded and also showed off a framed painting of a "Dung Beetle" done by his 7-year old neighbour, Dylan Fluker, who has a great passion for everything entomological and is one of Dave's greatest fans. Among the audience was a clutch of other insect book authors including Jack Hasenpusch, co-author with Paul Brock of the



Gary Wilson opens proceedings at the book launch. Peter Shanahan, who launched the book, is to his right. Spot the entomologists in the crowd.

CSIRO Guide to phasmids of Australia, Paul Zborowski, co-author with George Hangay of the CSIRO guide to beetles of Australia. Lastly, Max Moulds was there and he has produced several books, the best known being his book on Australian Cicadas and the bibliography of Australian butterfly literature. All these folk have come to live in far north Queensland and are working independently without government support. There must be a moral there.

By the way, Dave's new book on these most photogenic creatures is available for \$49.95 online at www.publish.csiro.au

David Rentz shows off his new katydid book and Dylan Fluker shows of his painting of a dung beetle.



NOTICES

Bribie Island BugCatch Saturday October 9

About "BugCatch"

"BugCatch" is a program of collecting trips run by the Entomological Society of Queensland (ESQ), in conjunction with the Queensland Department of Environment and Resource Management (DERM). The idea is to use the specialist insect collecting

and identification skills of Society members to compile lists of insects for protected areas (National Parks, Forest Reserves, State Forests, etc). Target areas are chosen jointly by ESQ and DERM and collecting permits are arranged. ESQ members attending the trips sign DERM volunteer forms to give them access to these permit privileges. Members are asked to supply lists of species collected, and these are included by DERM in their faunal databases. The Bug-Catch Program is coordinated by Geoff Monteith and Christine Lambkin, on behalf of ESQ.

Bribie Island National Park

DERM is about to prepare a Management Plan for Bribie Island National Park and has invited the Society to run a Bug-Catch day there and we have chosen Saturday October 9 for the event. Bribie Island is a large sand island (30 km long, 6 km wide) only an hour's drive from Brisbane and is accessible by a large road bridge across Pumicestone Passage from the mainland. There are thriving towns on both the ocean side and the passage side of the southern end of Bribie where the bridge makes its fall. But the northern three quarters of the island is unpopulated and consists of pine plantations in the centre surrounded by a relative wilderness of rich wallum vegetation designated as Bribie Island NP. It is famous as a wildflower area and the spring flowers should still be in bloom at the time of our visit.

The BugCatch Day

We will be choosing the meeting area on the island for the BugCatch day after this Bulletin goes to press. It is expected to be accessible by conventional cars and we hope to have a variety of habitats (heaths, woodlands, swamps) accessible within walking distance of our base. We will meet at around 10 am and will have some shelters available for smoko, lunch and working with specimens. We will run some light traps in the evening for those who wish to stay on for that activity. There will be a group of entomology students attending with their supervisors from the University of Queensland, so it will be a good opportunity for our experienced members to show off collecting techniques to the students. As usual we will install a variety of insect traps prior to the trip so that these can be cleared on the day.

Let us know if you are coming.

Final details will be provided to those who indicate they are coming. Geoff Monteith will act as leader and coordinator for the day. It is essential that you let him know you are coming, preferably at least 5 days before the day (phone 33712621;

geoff.monteith@bigpond.com). Christine Lambkin will also take details (phone 38407699; or email christine.lambkin@qm.qld.gov.au). Geoff Thompson will also be able to help with information (phone 38407690; geoff.thompson@qm.qld.gov.au). Geoff Monteith will be out of Brisbane 14-22 Sept. and 29 Sept-5 Oct). Christine Lambkin will be away most of September. We hope to see you there!

Journals from Alan Fletcher RS library need new home

Some may know that we are soon to transfer to the brand new Ecosciences Precinct at Dutton Park. As part of preparations for this move we are currently reviewing our scientific journals and finding some will be excess to our needs. We would be delighted to find a good home for the following two titles:

1. *Bulletin of Entomological Research*. We hold a large set of these, some bound and unbound, from 1929 (vol 20) through to volume 2004 (vol 94).
2. *Annual Review of Entomology*. We hold most of these which are in book form and in very good condition and have a set from 1961 (vol 6) to 2007 (vol 52)

If you know of an institution that might like them or even would like for personal copies please contact me.

Bill Palmer, Alan Fletcher Research Station
bill.palmer@deedi.qld.gov.au
07 3375 0748

Overdue Membership Fees Reminder

Members who have not yet paid their membership fees for 2010 are reminded to do so at earliest convenience. Thank you.

Desley Tree, Treasurer



Title _____ First name _____

Email

 _____postcode_____Date_____

Seconded by _____

- ☐
- in hard copy by mail

- or Please charge my : ☐ Bankcard ☐ Visa ☐ Mastercard

Name on Card _____

Expiry Date _____ Signature _____

Please return completed form to : Honorary Secretary
Entomological Society of Queensland
P.O. Box 537
Indooroopilly
Qld. 4068

Please retain the receipt below for your records

Entomological Society of Queensland—Receipt for payment of membership fees

Name _____ Date _____

Amount paid \$_____ for year/s _____

DIARY DATES 2010

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

MAR—Monday 8th	Dr Chris Lambkin (QM)	Presidential Address & AGM
APR—Monday 12th	Dr Nancy Schellhorn (CSIRO)	Landscape Scale Pest Management in Vegetable Crops
MAY—Monday 10th	Dr Martin Shivas (BCC)	Brisbane's mangrove-breeding pest midge <i>Culicoides ornatus</i>
JUN—Tuesday 15th	Student Award + Notes and Exhibits Session	
AUG—Monday 9th	Dr Alejandro Costamanga (CSIRO Post Doc)	Impacts of established natural enemy assemblages on soybean aphid in Nth America
SEP—Monday 13th	Don Sands	The role of insects in the breakdown of leaf litter: implications for fire management and weed control
OCT—Monday 11th	Ross Kendal (Butterfly Encounters Pty Ltd)	The Evolution of a Butterfly Farmer
NOV—Monday 8th	Bill Crowe (AQIS)	Australia's Most Unwanted
DEC—Monday 13th	Notes and Exhibits + BBQ	

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.

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The Australian Entomologist PO Box 537, Indooroopilly QLD 4068.



THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND



NEXT MEETING

12:00pm ~ MONDAY 13th September

Large Conference Room
CSIRO Long Pocket laboratories
120 Meiers Road Indooroopilly

Main Business:

**‘The role of insects in the breakdown of leaf litter and its
implications for fire management and weed control’.**

a presentation by

Dr Don Sands

CSIRO Research Fellow

VISITORS WELCOME

(please sign in at reception before meeting)

NEXT NEWS BULLETIN

Volume 38, Issue 6 (September 2010)
due early October

CONTRIBUTIONS WELCOME

DEADLINE - Thursday 23rd September

Send your news/stories/notices to the editor
(justin.bartlett@deedi.qld.gov.au)