ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN

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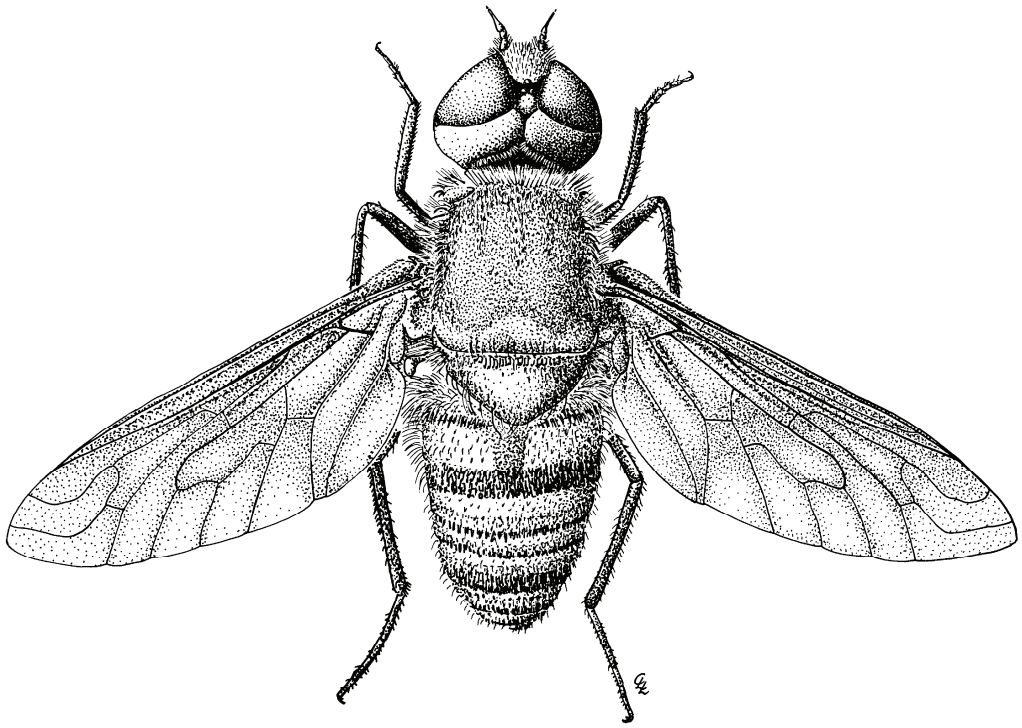

Volume 37, Issue 7, October 2009

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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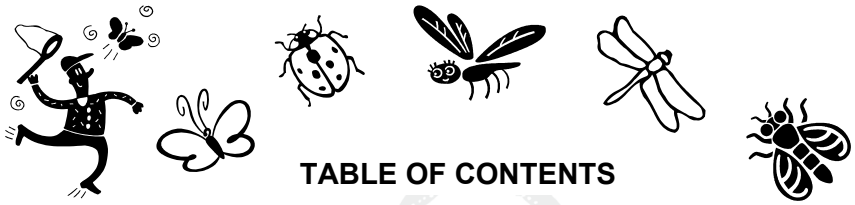

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The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists 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.

Editorial

Welcome to issue 7, volume 37 of the ESQ News Bulletin. It's been another quiet month news-wise, so I want to hear from all you entomologists out there, particularly if you have been busy with field work, or travelling, over last month or two. Surely there is plenty of news to share or stories to tell.

At the last general meeting, held on 12th October, attendees were treated to a fascinating talk by **Meron Zalucki** which touched on a myriad of difficult issues faced when dealing with pest population dynamics. I trust you'll find his short article just as interesting.

Also featured are reports of two recent conferences; the **IX International Symposium on Thysanoptera and Tospoviruses**, and the **Darwin 200: Evolution and Biodiversity** conference.

The ***Entomologists in Action*** feature is back this issue with a profile of the **biocontrol team** at **CSIRO Entomology, Long Pocket,** who kindly took time out to tell us about themselves and their important and multifaceted work dealing with weed biocontrol and management of invasive plants.

Remember, if you are organizing an entomological event, or just know of something coming up, feel free to let me know, and I'll include it in the ***Notices*** section of the Bulletin.

Until next issue……...

Justin Bartlett
News Bulletin Editor

Send your news, notices, etc, direct to:
justin.bartlett@deedi.qld.gov.au

Minutes of General Meeting

Held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on Monday, 12^{h} October, 2009 at 12:00 pm.

Chairman: Matt Purcell.

Attendance: Desley Tree, Justin Bartlett, Don Sands, Geoff Thompson, Regis Goebel, Susan Wright, Greg Daglish, Pat Collins, Andrew Hulthen, Lynita Howie, Tim Heard, Geoff Monteith, Richard Bull, Marios Aristophanous, Shaun Winterton, Felix Bianchi, Nanacy Schellhorn, Myron Zalucki, Trevor Lambkin, Sarah Corcoran.

Visitors: Nate Hardy, Karen Bell, Craig Jennings, Neil O'Brien, Steven Rice.

Apologies: Judy King, Peter Allsopp, Gary Fitt, Noel Starick, Chris Lambkin, Mike Furlong.

Minutes: The minutes of the last General Meeting, were circulated in the News Bulletin Vol. 37, Issue 6 of September 2009.
Moved the minutes be accepted as a true record: Richard Bull.
Seconded: Geoff Monteith.
The motion was carried by show of hands.

Nominations for Membership:
The following nominations for Membership were received and approved by Council, and are now put before the meeting for election:
Mr Andy Walker of Braddon, ACT
Mr Peter Hendry of Redland City, Qld
Mr Robert Whyte of The Gap, Brisbane, Qld
Mr Kyran Staunton of James Cook Uni, Townsville, Qld
Mr Marios Aristophanous of Townsville, Qld
Mr Martin Steinbauer of Melbourne, Vic

Chairman called for members to vote for their election by a show of hands. All were in favour and the Chairman welcomed new members at the meeting.

General Business:
There was no general business.

Main Business

Pest population dynamics: changing climate, agricultural landscapes and pesticide usage in Australia?

M.P. Zalucki

School of Biological Sciences, The University of Queensland

Pest population dynamics, the changing abundance of a pest in time and space, is highly variable, as it is for any insect. The difference of course is that pests inflict economic damage at some level of abundance and often require some degree of management. Many factors influence pest insect populations dynamics, from the abundance of hosts (both crop and non-crop) across the landscape to natural enemies, climate and weather, and perhaps even our attempts at management.

Since the colonisation (invasion and occupation) of Australia by Europeans, agriculture has expanded from the first meagre plantings in 1788 to ca 25,000,000 ha planted to crops over a full season. The trend has been one of expansion, apart from fluctuation due to drought, and although the area under crops is only a small percentage of the continent, it is concentrated in a few regions with favourable rainfall. In these landscapes the changes have been dramatic: clearing, expanding area in crops grown year round that ostensibly provide a smorgasbord of host plants for various major pests. Have these landscape level changes in fact promoted the abundance of some insect pests. In effect created a "tipping point": a culmination of a build-up of numerous small actions that effect a big change; see Schellhorn *et al*. (2008) for an extended discussion.

The type of evidence to show support for a "tipping point" includes a positive correlation between pest populations and area of host plants, increasing abundance of a pest over time which may be reflected in insecticide use and/or distribution records of current day pest more widely distributed than historical record. However the difficulty with demonstrating any of these is that other factors may be responsible, e.g. weather, changes in cropping composition.

Insecticide use in Australia: just how green is our Agriculture?

The key mantra in insect pests management has been IPM and this approach has been promoted in all cropping systems to varying degrees in Australia over the last 30 years. Consequently it might be expected that real insecticide expenditure per ha should have at least stabilised or maybe even declined during this period. Examination of the data shows that the cost of insecticide inputs into Australian agricultural crops increased over this period, with the notable exception of major drought years when input costs dropped. The increased real costs of insecticide inputs during the period is likely to be explained in part by changes in crop composition as wheat, which has low managements costs has been gradually replaced by other crops (e.g. various oilseeds) which have higher management costs as well as new more expensive insecticides (Zalucki & Furlong 2009).

Changing pest abundance – *Helicoverpa* spp.

The larvae of *Helicoverpa punctigera* (Wallengren), and *H. armigera* Hübner feed on a very wide range of host plant species (Zalucki *et al*. 1986). Both species are migratory and can move extensively (Gregg *et al*. 1995, Rochester *et al*. 2002). Influxes of moths may occur into an area from far away, or from nearby fields

Depending on the crop plant and season, complete loss of production can result if caterpillars are left unchecked.

Although it has been claimed that *Helicoverpa* problems have increased over time because "today …we have…economic host material available over large areas continuously from early spring to late autumn" (Tom Passlow, DPI entomology, pers comm., 1986), the evidence is not strong. This is because the seasonal dynamics of both species is driven by weather and migration as well as local conditions. Evidence that pest pressure at a regional or landscape level can be attributed to landscape characteristics is therefore difficult to both gather and interpret. There is weak evidence that abundance may have increased in the spring in Tasmania, reflecting perhaps the change in area and mix or crops on the mainland (Schellhorn *et al*. 2008, Zalucki *et al*. 2009).

Regression analyses of long series of light-trap catches for both species at Narrabri allow good predictions of the numbers of moths caught in any week between early November and the end of March (Maelzer *et al*. 1996, Maelzer & Zalucki 1999, 2000). The analysis indicates the key role of rainfall at the appropriate time and place in inland areas and within cropping areas (Zalucki *et al*.1994). Subsequent rainfall on the developing generation tends to reduce survival and subsequent abundance (Maelzer & Zalucki 1999).

The inclusion of crop variables for *H. armigera* in regressions suggests landscape level effects are present. The area planted to maize had a positive effect on abundance, sorghum a negative influence around Narrabri and lucerne a positive effect on both species (Maelzer & Zalucki 1999). However the lack of a relation between spring catches of *H. armigera* and abundance in the last generation of the previous year suggests local abundance is not strongly influenced by local landscape conditions or that winter mortality is more crucial than oft thought.

Rochester *et al*. (2002) undertook and extensive analysis of an AWM scheme at Brookstead and Jimbour. The analysis supported the hypothesis that moths move freely among crops within the region and preferentially lay eggs on attractive crops. Oviposition varied among cotton crops and was not related to estimated moth production by a specific crop field. It must therefore, have been determined by the number of moths entering and leaving the crop and by the number of eggs laid by moths when in the crop. These numbers are determined by the abundance of moths within reach of the crop and the attractiveness of the crop relative to its surroundings. Oviposition varied in patches many kilometers across, much as pheromone catches of males were patchy (Fitt *et al*. 1989). The patches persisted but were not constant. Patchiness in oviposition arises from spatial variation in moth emergence or crop attractiveness. Variation in emergence is unlikely to explain all of the patchiness in oviposition because patchiness in the abundance of the large larvae that gave rise to the moths was less than patchiness in oviposition. Crop attractiveness therefore appears to vary in patches many kilometers across. The variation may be due to features of the crops themselves (e.g. cotton variety, management practices) or to features of the landscape (e.g. surrounding crops and native vegetation).

An important unknown is the relative contribution of non-cotton crops and wild hosts to moth abundance. The scouting data suggest a net movement of moths from non-cotton hosts (or other regions) early in the season, but provide no information on the potential pool of moths on those hosts. If most moths originate on non-cotton hosts, then oviposition on

cotton would reflect emergence from those hosts rather than cotton. If *Helicoverpa* phenology and attractiveness did not differ markedly between cotton and non-cotton hosts, then the resulting oviposition pattern would be difficult to distinguish from that for a cotton monoculture. Thus, although cotton potentially provided enough moths to supply its own eggs from January onwards, it was not necessarily the primary source of moths in the region at that time.

The unknown contribution of non-crop hosts is a problem for area-wide management planning. For example, to choose between mowing of weeds, management of spring crops and improved management of cotton, we need to know which hosts contribute substantially to regional abundance. Perhaps the strongest recent evidence that large scale landscape plant (=crop area) related processes affect abundance has been the wide spread growth of Bt cotton (Ingard and more recently two gene cotton). Since these effectively make cotton a sink we would expect a decline in sprays for *Helicoverpa* and an increase in natural enemy abundance. Both appear to have occurred. However Zalucki & Furlong (2005) point out that the decline in *Helicoverpa* over this period also coincides with a decline in climatic suitability, highlighting the difficulty in testing landscape level hypothesis.

DBM a host specialist

The diamondback moth, *Plutella xylostella* L. (Lepidoptera: Yponomeutidae), or DBM is, perhaps, the major pest of crucifers. Surprisingly little has been done on long term population dynamics and what determines DBM populations at a landscape level. Abundance can vary greatly among years. Outbreaks of the increasingly insecticide resistant DBM can make management of this pest difficult. Being a host plant specialist we might expect abundance to be related to the availability of host-plants, perhaps more tightly than in a polyphage such as *Helicoverpa*, as well as to variation due to climate and migration (Zalucki & Furlong 2005).

Brassica cultivation of various types has increased steadily in Australia over the years. So apparently has the DBM problem. One of the most dramatic changes in recent years has been the huge increase in canola production, particularly in Western Australia (see Furlong *et al*. 2009). Canola is a DBM host and populations can reach large levels in the crop. The area under canola has grown from around 100,000 ha in the 1960 –mid 1980's to ca 1, 300, 000 ha by 2005! At even 1 moth per m2 (and densities are usually much higher) this represents *ca* 13 billion more DBM than before (it is unlikely the area now planted to canola supported significant DBM population on say weedy Brassicas). As the canola crop is rotated wheat moths will migrate out from such areas. Perhaps not surprisingly the DBM problem in vegetable Brassicas appears to have increased in southern States since about the mid-1990's. Certainly the size of spring flights into Tasmania for example have steadily become larger over time.

Host plant abundance and timing of planting appears to have influenced DBM problems at a smaller scale in vegetable growing areas like southeast Queensland. Brasicca vegetable production steadily increased in the Lockyer with year round production in the 1970's. The high DBM problems which ensued were "controlled" with pesticides until resistance developed, causing major yield losses in the 1980's. This led to a rotation of pesticides, wider adoption of SSP type IPM and a summer production break. The latter has been credited as the circuit breaker, thus although production areas have continued to increase there has not been a major resurgence of

DBM. Although this interpretation seems reasonable it does not take into account weather.

Zalucki & Furlong (2008) developed a CLIMEX model for DBM. This approach may be used to generate a climate driven null model for the abundance of a species at a site over time. Such models, that enable one to infer likely species abundance based on climate are critical to testing effectiveness of management strategies such as area wide management and the planting of transgenic crops (e.g., Zalucki & Furlong 2005), as well as predicting temporal dynamics and outbreaks of pests (e.g. Zalucki & van Klinken 2006). Historical climate data can be used to predict both the expected range and variation in the seasonal and annual temporal dynamics of the pest, and therefore of likely pest status. For the Lockyer area we predict a decline in DBM due to weather, which coincides with the production break (see Zalucki & Furlong 2008)!

Less contentious is the effect on DBM mortality due to natural enemies. In an extensive series of exclusion experiments Furlong *et al*. (2004ab) showed that natural enemy mortality due to predators and parasitoids in Brassica fields where insecticides had not been used was highest, were lowest in fields where "heavy" insecticides were extensively used and intermediate for SSP IPM. More importantly the variance in mortality was low in high pesticide fields, low in low pesticide fields and high in IPM. Thus in fields where broad spectrum insecticides had not been used for some time mortality was high and assuredly so. In fields with high insecticide use mortality was assuredly low due to natural enemies meaning one would have to use a pesticide even for low egg lays. Management units under SSP were intermediate but more variable making management risky. What has not yet been tested are large area or scale effects; namely whether a set of contiguous fields with the same management regime has a greater effect on natural enemy than that in a single field.

Coda

Disentangling the various influences on insect population dynamics will be essential in the future. Devising adaptation strategies to global change, including climate, will require more than just playing computer games with numbers. Managing insect pests to cope with the required doubling in production demands means we will need to understand the relationship between insect pest abundance at a field and landscape scale, the influence of climate as well as management practices. The really difficult part in this undertaking will be changing attitudes to management practice, as opposed to developing better approaches.

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Vote of thanks was given by Desley Tree.

Chairman's closing statement:
The next meeting will be held at this venue on Monday, 9th November, 2009 at 12.00am with a talk by Chris Burwell of Qld Museum.

Notice of Next Meeting

Monday 9th November, 2009, 12pm

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Guest speaker

Dr Chris Burwell

Queensland Museum

"Ants with Altitude: the potential of ants as bioindicators of climate change in subtropical rainforest"

*****

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

ALL WELCOME

(please sign in at reception before meeting)

People and Projects

IX International Symposium on Thysanoptera and Tospoviruses 31 August – 4 September 2009

The symposiums on Thysanoptera and Tospoviruses are held every four years, the last being in California, USA, in 2005. This year we were fortunate to host the symposium here in Queensland, at the Sea World Resort, Gold Coast.

The conference was well attended, despite the world economic downturn and much to the relief of the organising committee! A total of 120 delegates attended from 19 countries including Austria, Brazil, Germany, India, Iran, Italy, Japan, Kenya, Netherlands, China, Slovakia, South Africa, Sweden, Uganda, USA, UK, NZ, and of course Australia was well represented.

While Sea World Resort provided a great location and venue for the conference,

Group photo of participants of the IX International Symposium on Thysanoptera and Tospoviruses.

the Sunshine State kept up its part of the bargain, enabling many delegates to enjoy walks along the beach or sample local restaurants.

Laurence Mound, CSIRO Canberra, and Dianne Ullman, University of California, gave the opening addresses which set the scene with very entertaining and thought provoking presentations. Laurence discussed the contrasts in diversity of thrips and tospoviruses in Australia, and Dianne presented thrips vectors and tospoviruses – rendezvous with destiny.

The sessions that followed covered topics on Thrips management - IPM and biological, biosecurity threats, semiochemicals and thrips behaviour, thrips systematics and identification, ecology of thrips, density dependence and, of course, other topics covering tospoviruses.

A total of 83 presentations were given over the four days as well as 38 posters presented. Much ground-breaking research was presented, as well as some very entertaining and unusual aspects of thrips and tospoviruses.

The final address was given by Anna Whitfield from Manhattan, USA, and the symposium was closed by the chair of the organising committee - Denis Persley, QPI&F, Brisbane.

The next symposium will be held in Brazil, 2013.

Desley Tree

Darwin 200: Evolution and Biodiversity

A report from Brian Thistleton (Australian Entomological Society)

The Combined Australian Entomological Society's 40th AGM & Scientific Conference / Society of Australian Systematic Biologists / 9th Invertebrate Biodiversity & Conservation Conference, was held from 25-28 September, 2009 at the Holiday Inn Esplanade Darwin. This meeting was arranged to follow on from a Special Charles Darwin Symposium being held 22-24 September 2009 to celebrate the 200th anniversary of the birth of Charles Darwin, 150th anniversary of his work The Origin of Species and, for Darwinites, the 170th anniversary of the naming of the Port of Darwin during the third voyage of the Beagle.

The conference consisted of 17 symposia covering evolution, biodiversity, ecology, biosecurity, applied entomology, biological control, taxonomy and its future, systematics, insect-plant interactions, social insects, invertebrate surveys, biodiversity conservation management, impacts of fire, genetics of climate change, threatened species, marine biodiversity and the Darwin Harbour. There were 19 plenary and keynote speakers, 133 contributed papers and 25 posters – 177 presentations in total. There were 201 delegates to the combined conference, including 80 full AES members and 12 AES student members.

Social events included a Welcome Reception at the NT Library where a copy of a first edition of *On The Origin of Species,* on loan from the State Library of New South Wales, was on view; a reception at Crocosaurus Cove where large salt water crocodiles are on display right in the centre of Darwin; and, of course, the conference dinner.

The Phil Carne prize was awarded to Kylie Anderson for her work on *Eumetopina flavipes* (Hemiptera: Delphacidae) in PNG and the Torres Straight Islands and her Phil Carne address was entitled *How sweet it is! The effect of host availability on the invasion potential of the island sugarcane planthopper.*

The usual illustration, photographic and student presentation and poster sessions

were held. There were 17 entrants to the student black and white illustrations competition with a total of 25 pictures, and the first and second prizes were awarded to Christine Rockley for an illustration of the robber fly *Chrysopogon kastanios,* and Nadia Waters *(*water scorpion *Laccotrephes tristis*) respectively. There were only two entries for the student colour illustration and the first prize was awarded to Timothy Owers (green Christmas beetle *Anoplognathus prasinus*). The open illustration black and white had two entrants with a total of four pictures and the first prize was awarded to Dina Yu. Rogatnkh (zopherid *Phellopsis amurensis*) while the Open Illustration Colour had three entrants and a total of three pictures with the first prize going to David Poyner (chrysomelid beetle *Spilopyra sumptuosa*). The photographic competition attracted seven entrants with a total of 16 photographs and the first, second and third prizes were awarded to Graham Brown (tabanid *Tabanus ?pallipennis*), Stephen Doggett (spider *Dinopis subrufa*) and Neil Wright (dragonfly *Lathecrista asiatica*). There were 26 student papers with the winner being Cheryl O'Dwyer (*Insect assemblages in grey box grassy woodlands*) and three student posters won by Katrina Fernandez (*Diversity and functional grouping of ground foraging ant fauna on the sadas of the Western Ghats of South India*).

The organising committee comprised Professor Chris Austin (Head of School, School of Environmental and Life Sciences, Charles Darwin University) representing Invertebrate Biodiversity & Conservation, Dr Michael Braby (Curator of Entomology, Museum and Art Gallery Northern Territory) for Society of Australian Systematic Biologists, and Dr Graham Brown and Dr Brian Thistleton (Principal Entomologist, NT Department of Regional Development, Primary Industry, Fisheries and Resources) representing Australian Entomological Society.

ENTOMOLOGISTS IN ACTION

In this edition ……

The CSIRO Entomology biocontrol group Long Pocket Laboratory

A number of people with CSIRO Long Pocket Labs at Indooroopilly work on biocontrol of weeds within a larger group working on invasive plant management generally. In addition, we have four staff based in Mexico (perhaps a topic of a future issue?).

Karen Bell

Karen is a post-doctoral fellow, whose research interests include molecular evolution, systematics, phylogeography and biogeography. As part of the tropical weeds biocontrol group, she is examining how knowledge of the biogeography of the region where the host-plant occurs and phylogeography of the host-plant affects the distribution and biodiversity of insects utilising the plant, and how this information can be used to

improve the efficiency of native-range surveys for potential biocontrol agents. The target weeds for this project are *Parkinsonia aculeata* and *Jatropha gossypiifolia*. She is also using molecular methods to investigate intraspecific variation in insects occurring on *Parkinsonia aculeata*, and how this intraspecific variation is structured by geography and host-plant use. Karen obtained her B. Biotech. (Hons) from Flinders University and Ph. D. in Entomology from the University of Queensland.

Richard Chan

Richard primarily works on the rearing and host specificity testing of potential biological control agents. Recently, he has been testing insects for the control of alligator weed and cabomba. The cabomba weevil, *Hydrotimetes natans*, has been particularly challenging due to the difficulty in rearing an insect underwater in a quarantine building, but Richard is up to this task after 25-odd years of rearing difficult insects for the group. He has been involved in many projects including the wonderfully successful salvinia weevil. Richard grew up in Sabah, Borneo, where he returns often to visit family and to undertake weeds work (in fact he there right now which explains his absence from the photo).

Gio Fichera

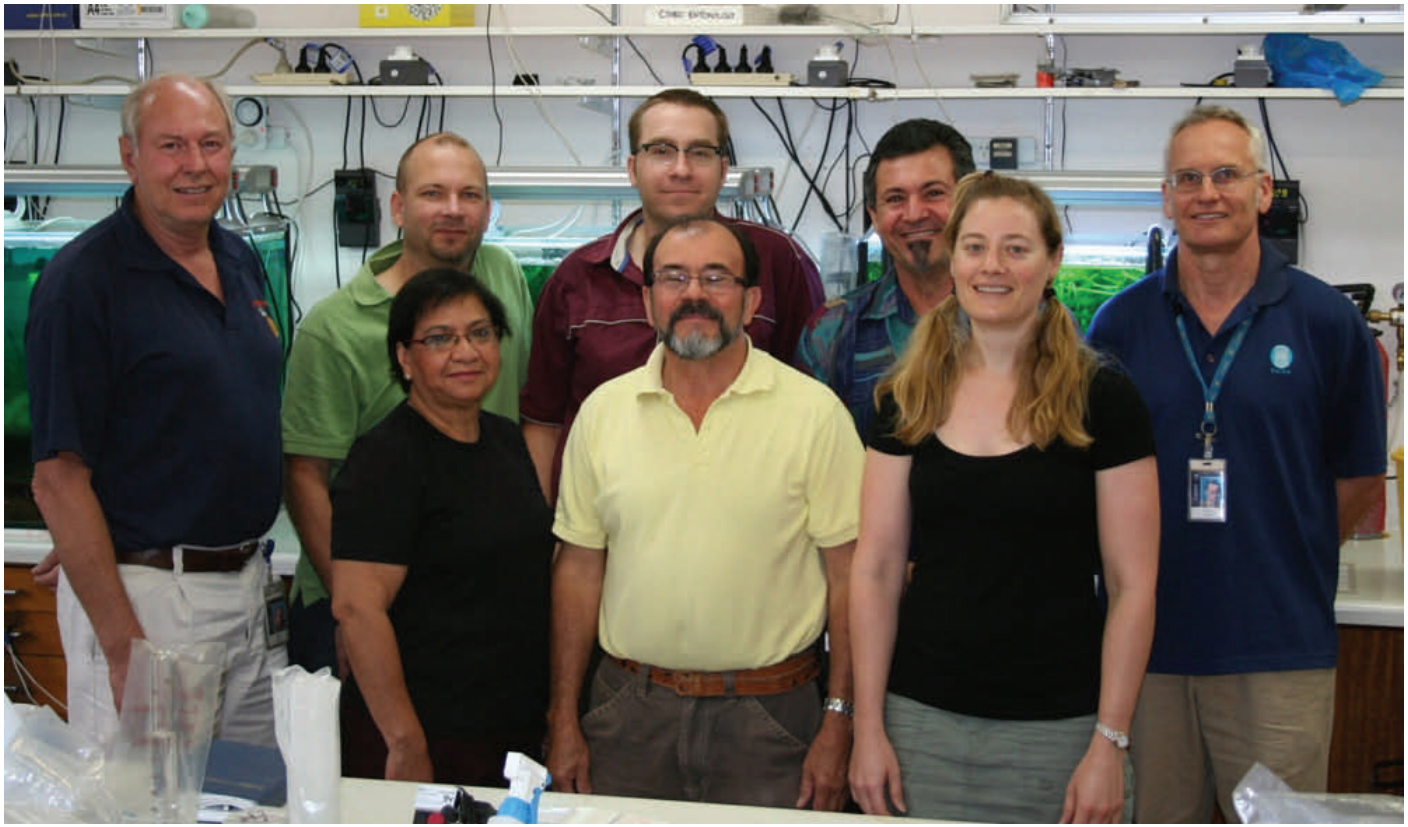
Gio Fichera (B Ag Sc) has been employed in the Entomology Tropical Invasive Plants program for twenty-two years, following seven years in the ornamental nursery industry. He has involvement in all areas of the processing of biological control candidates through Quarantine, from general greenhouse maintenance, pest insect control, production, maintenance & supply of the test and food plants, experimentation, rearing & testing of agents, post Quarantine release mass production, distribution into the field, liaison with field officers in other organisations and field monitoring for agent establishment, performance and spread. When required, he provides practical assistance and technical advice to visiting international students, PhD students and Post-Doctorate staff with field surveys, field/ glasshouse & lab experiments set-up, administration of treatments, maintenance, sampling, data collection and harvest. Currently, under Shon Schooler's supervision, he is working on the submerged aquatic invasive Cabomba and wetland invasive Alligator Weed and their potential biological control agents.

Tim Heard

Tim leads activities on biological control of a number of weeds of northern Australia all of which originate from tropical America. Tim uses insect behavioural and ecological knowledge to solve weed biological control problems. His work covers the fields of plant-insect interactions, and insect and plant biology. He works on the optimisation and management of biological control agents. He has undertaken a program of host specificity testing in Australia and overseas with taxonomically and biologically diverse insects. He is involved in the selection of biocontrol agents from the broad range of herbivores in the native range of target weeds. The target weeds of interest include: *Mimosa pigra*, *Jatropha gossypiifolia* and *Parkinsonia aculeata*. He is the manager of the CSIRO Mexican Field Station in Veracruz and the quarantine facility at Indooroopilly. Tim obtained his B.Agr.Sc. and Ph.D. in entomology from University of Queensland.

Mic Julien

Mic returned to Long Pocket Labs after 3 years as OIC of the CSIRO lab at Montpellier, France. He continues to work on aquatic weeds with Shon specifically looking after the native range surveys in South America in collaboration with the USDA lab at Buenos Aires. He also leads the lippia management project with Rieks.



Back row: Mic Julien, Rieks van Klinken, Shon Schooler, Gio Fichera, Tim Heard; Front row: Areli Mira, Dalio Mira, Karen Bell.

Areli Mira

Areli has a BSC degree attained in El Salvador, Central America. She has been working at Long Pocket CSIRO since 1993 as a Research assistant technician. In the past Areli has given support in weed projects conducted by Tony Wright, Wendy Forno, Shaun Winterton and is currently working with Rieks VanKlinken and Tim Heard. Areli conducts host specificity testing of a wide range of potential biological control agents. These tests have provided crucial information required for risk assessment prior to the agent's release. A variety of tests is usually required for each species and they need to be tailored to suit the biology and behaviour of each species. Before joining the CSIRO Areli worked at the Queensland Museum in the curator section, with Dr Geoff Monteith. At the same time she also worked at Griffith University in curator projects for Professor Roger Kitching. In El Salvador Areli worked in integrated pets management control in crops (beans, maize, Sorghum and Citrus), and stored grains with farmers (FAO Project).

Dalio Mira

Dalio is a Research assistant focusing on weeds in two main groups: Australian plants invasive in USA such as *Melaleuca quinquenervia, Lygodium microphylum, Casuarina* sp. and *Hydrilla*; and exotic plants invasive in Australia such as *Mimosa pigra, Alternanthera, phyloxeroides, Parkinsonia aculeata, Jatropha gossypiifolia, Hyptis suaveolens, Sida acuta*. Dalio's main duties are plant propagation and to maintain plant material in good condition for experiments. He is responsible for weed and pest control inside and outside the glasshouse. Dalio obtained his B.Agr.Sc. from the University of El Salvador in 1974. He did further study at the Queensland University in Tropical Animal Science and also received a certificate in Horticulture from Ithaca College. In El Salvador Dalio worked more than 20 years in Animal production specialising in beef and dairy cattle.

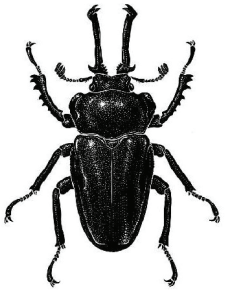
Shon Schooler

Shon is studying the ecology and management of invasive aquatic plants. Similar to invasive terrestrial plants, invasive aquatic plants have negative environmental, economic, and social impacts. However, controlling aquatic weeds can be particularly challenging due to difficulties in physical removal and restrictions on applying herbicides in and around water bodies. Two alternative methods of control provide self-sustained regulation of aquatic plant infestations; biological control and landscape management. Shon is particularly interested in biological control and is currently testing potential biological control agents for alligator weed (*Alternanthera philoxeroides*) and cabomba (*Cabomba caroliniana*). Landscape management is more difficult to implement, but may provide sustained control of multiple species. He is currently investigating the effect of peri-urban land-use on aquatic plants. He is also interested in measuring the environmental impacts of invasive plants. Shon Schooler received his PhD in Entomology from Oregon State University in 2003, studying the impacts of aquatic plants on the biotic diversity of wetland plant and herbivore communities.

Rieks van Klinken

Rieks finished his PhD in Entomology (on the field ecology of drosophilids) at the University of Queensland in 1996 and since then has been working on tropical invasive plants with CSIRO. Much of his work now focuses principally on the plant side of things, although he has ongoing projects to better predict which potential biocontrol agents will be effective, and on evaluating the impact of biological control agents. The most exciting agent being evaluated is a leaf-tying moth on the thorny shrub mesquite (*Prosopis*) which has been causing dramatic population-level impacts since its release in 1998.

Nomination for membership of the Entomological Society of Queensland



Title____ Initials_____Preferred name _____

Surname_____

Address_____

_____

_____ Postcode _____

email_____@_____

Nominated by_____

Seconded by_____

☐My cheque/money order is enclosed

☐Please charge my credit card
☐ Bankcard ☐ Visa ☐ Mastercard

Name on card_____

Expiry date___/___signature_____

☐ I would like a receipt

☐ general membership $30.00
☐ joint membership $36.00 ☐ student membership $18.00

I would like to receive the bulletin by
☐ normal mail (Australia Post) ☐ e-mail as a PDF file

Return to
Honorary Secretary,
Entomological Society of Queensland
P.O. Box 537
Indooroopilly 4068
Queensland

DIARY DATES 2009

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

MAR—Monday 9th	Dr Mike Furlong (UQ)	AGM & Presidential Address
APR—Tuesday 14th	Nate Hardy (QPIF)	Mealybug Classification
MAY—Monday 11th	Mary Whitehouse (CSIRO Narrabri)	From Lynx Spider to Cotton
JUN—Tuesday 9th	Student Award and Notes & Exhibits	Notes and Exhibits session
AUG—Monday 10th	Perkins Memorial Lecture: Professor Gerry Cassis (UNSW) and BBQ	Planetary Biodiversity Inventory and Systematics of Australia's True Bugs
SEP—Monday 14th	Trevor Lambkin (QPIF)	The Butterflies of Torres Strait
OCT—Monday 12th	Myron Zalucki (UQ)	Pest Population Dynamics
NOV—Monday 9th	Chris Burwell (QM)	Ants as bioindicators of climate change
DEC—Monday 14th	Notes & Exhibits and BBQ	

SOCIETY SUBSCRIPTION RATES

GENERAL:	Person who has full membership privileges	**$30pa**
JOINT:	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT:	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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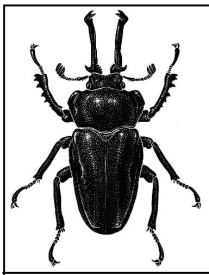

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

NEXT MEETING

12:00pm ~ Monday 9th November
Large Conference Room, CSIRO Long Pocket laboratories
120 Meiers Road Indooroopilly

The main business will be an address by
Chris Burwell (Queensland Museum)
entitled:

**"Ants with Altitude:
the potential of ants as bioindicators of
climate change in subtropical rainforest"**

VISITORS WELCOME
(please sign in at reception before meeting)

NEXT NEWS BULLETIN

Volume 37, Issue 8, November 2009
due early December

CONTRIBUTIONS WELCOME

Send your news/stories/notices to the editor
(justin.bartlett@deedi.qld.gov.au)
by Monday 30th November