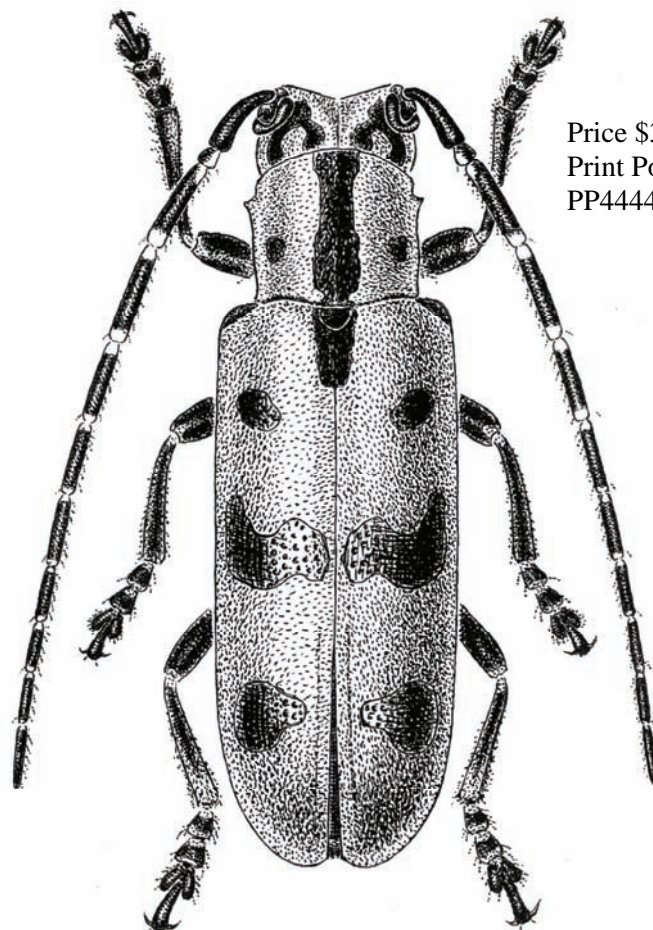




# ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC NEWS BULLETIN



Price \$3.50  
Print Post Approved  
PP444461/0003

Volume 38, Issue 3, May 2010

## THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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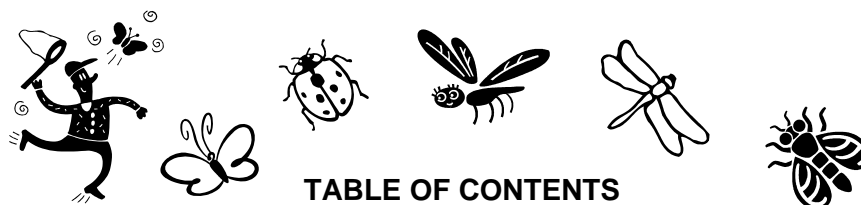
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**Front cover illustration:** Habitus of *Zygrita diva* Thomson (Coleoptera: Cerambycidae), the lucern crownborer—artist William Manley, scanned from original illustration ©Queensland Department of Employment, Economic Development and Innovation

ISSN 1037-2989



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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 50<sup>th</sup> 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 4<sup>th</sup> edition, 1999". Authors alone are responsible for the views expressed.

## Editorial

This month we have two Main Business articles: *The biology of Brisbane's mangrove-breeding pest midge, Culicoides ornatus* by **Martin Shivas** of the BCC Mosquito Management Group, and the late inclusion of a talk, *Landscape Scale Pest Management*, presented by **Nancy Schellhorn** (CSIRO) at the April meeting.

**Geoff Monteith** takes us on another photographic tour of insect-themed art works around and near Brisbane (see Vol. 37, issue 9, for his first installment). **Ben Hoffman** (CSIRO) reports on the recent Invasive Ant Management Workshop held in Darwin 27-29 April. University of Queensland student **Penelope Mills** is announced as this year's recipient of the Society's Student Award.

The *Entomologists in Action* feature section returns this month with an article by **Mike Muller** and **Martin Shivas** on their work for the **Brisbane City Council's Mosquito Management Group**. This together with Martins' Main Business address has certainly helped to shed some light on some of the important entomological work undertaken by BCC staff.

**Justin Bartlett,**  
News Bulletin Editor

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## Minutes of General Meeting

Held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on Monday, May 10, 2010

**Chairman:** Matt Purcell

**Attendance:** Bradley Brown, Richard Bull, Lyn Cook, Bill Crowe, Gio Fichera, Gary Fitt, Stephen Frances, Tim Heard, Ross Kendall, Judy King, Chris Lambkin, Lance Maddock, Penny Mills, Geoff Monteith, Mike Muller, Helen Nahrung, Matt Purcell, Don Sands, Shon Schooler, Desley Tree, Geoff Thompson, Federica Turco.

**Visitors:** Karen Bell, John Lydon, Michael Meissle, Tony Robinson, Rieks van Klinken.

**Apologies:** Justin Bartlett, John Moss, Champa Rajapakse.

**Minutes:** The minutes of the last General Meeting, were circulated in News Bulletin Vol. 38, Issue 2, April 2010.

*Moved the minutes be accepted as a true record:* Richard Bull

*Seconded:* Desley Tree

### Nominations for Membership:

The following nominations for Membership were received and approved by Council, and are now put before the meeting for election:

Ms Tania Kenyon, Thorneside Qld.

Mr Brad McNeil, Paddington, Qld

Dr Jason Mate.

Nominees were elected unanimously by show of hands.

### General Business:

1. The President reminded members that the June meeting is 'Notes and Exhibits. Contributions of up to 15 minutes would be welcome and asked that contributors contact himself or Judy King. This meeting will be held on Tuesday June 15, as Monday is a holiday.

2. Treasurer reminded members that fees are due.

3. Chris Lambkin, Permit Officer: there are 83 members on the permit list, 15 have requested extra parks be added to their permits. DERM will provide updated permits end of May-early June.

4. Don Sands reminded members that protected species permits must have two endorsements. He will be resigning as host for protected species permits.

5. Announcements are included for 'The Australian Entomological Society's 41<sup>st</sup> AGM and Scientific Conference, Perth, 26-30 September 2010'; 15<sup>th</sup> International Congress of Myriapodology

## Main Business

### The biology of Brisbane's mangrove-breeding pest midge, *Culicoides ornatus* (Diptera: Ceratopogonidae)

Martin Shivas, Brisbane City Council

In the spring of 2004 complaints of midge biting activity were received by Mike Muller, the Brisbane City Council entomologist, from areas in the western suburbs of Brisbane that had previously been relatively complaint free. Although activity by the day-biting ceratopogonid *Forcipomyia* (*Lasiohelea*) *townsvillensis* is common in the western suburbs during warm wet summers, Mike realised that this was something different. In particular, the fact that biting was reported to be predominantly in the mornings and afternoons indicated that it was more likely to be a *Culicoides* species rather than *Lasiohelea*.

Although no biting midges in Australia transmit human diseases many people have strong reactions to their bites. People with no previous exposure often develop weals the size of a five cent piece that can blister and weep. Add to this the large numbers in which midges can occur and their potential significance as pests goes beyond being just a minor nuisance. This is especially true when children are involved. It is not unknown for people to sell and relocate due to midge problems.

Specimens collected from Oxley Creek at Corinda were quickly identified by Mike as the infamous mangrove-breeding pest midge *Culicoides ornatus*, a potentially serious and intractable pest. It has been described as the commonest "plague species" of coastal areas within its range and the most serious pest midge in northern Australia. What was an intertidal pest midge, usually known from coastal areas, doing in the western suburbs of Brisbane?



Fig 1. *Culicoides ornatus* females

Previously the known southern limit of *C. ornatus* was Tin Can Bay about two hundred kilometres north of Brisbane. Its presence in Brisbane was a mystery and raised many questions. Was this another purported result of global warming? Was it related to the drought which had gripped Brisbane's catchments since 2001? Were tidal waterways silting up and creating breeding areas? There were as many theories as entomologists but a theory doesn't do much for a home owner under attack.

In the following years problems due to *C. ornatus* spread both downstream and upstream from the original area of activity. By the summer of 2007/08 complaints had been received along the Brisbane River, from Westlake in the west to Morningside in the east, plus three of the four major tidal creeks flowing into the Brisbane River. This was without even actively surveying for new midge sites! Almost all mangrove lined waterways in Brisbane were implicated as potential midge habitat and all associated urban areas as potential areas of pest activity.

This issue was taken very seriously by Brisbane City Council but what do you do when there are no effective management options for "source" control? Mangroves are not a habitat where chemical control is an option. Avoidance, personal protection and household protection are effective for most situations but all entail a degree of compromise of lifestyle and have limited effectiveness when children are involved or when midge numbers are very high.

In spring of 2008 I was appointed to undertake a research program to try and answer some of the many questions raised by the presence of *C. ornatus* in Brisbane and to work toward effective management options. This project has been going for a year and a half now and the starting point has been to try and understand the basic biology of this midge in Brisbane. Most previous studies on this species have been undertaken in tropical

northern Australia, especially in the vicinity of Darwin in the Northern Territory. This is a region with very different climate and tidal patterns to that of Brisbane and so it is not surprising that our results indicate almost as many differences in the biology of *C. ornatus* between the two areas as similarities.

For example, in Brisbane the main larval habitats of which we are aware are in mud well below Mean Sea Level (MSL) on the open creek banks of wide open tidal creeks and in association with pneumatophores of the Grey Mangrove, *Avicennia marina*. In northern Australia the two known types of larval habitat are also in mangrove mud but in distinctly different parts of the mangrove ecosystem. One occurs well above MSL on the open creek banks of small "blind" tidal creeks and also in association with Grey Mangrove pneumatophores. The other occurs below MSL on broad flat areas at the mouth of tidal creeks where there are mature stands of the White Mangrove Apple, *Sonneratia alba*. These three habitats each share some things in common but also have significant differences. Do we have one midge species in three habitats or two or three morphologically indistinguishable species each with their own habitat?

There are also intriguing differences in the periods when the adult midges emerge during each fortnightly spring-neap tide cycle. In Brisbane female emergence is usually between the spring and the following neap tides while in the northern Australian habitat above MSL it occurs in the other half of the tide cycle *i.e.* between the neap and its following spring tides. We have recently documented a distinct seasonal shift in the period of emergence here in Brisbane which correlates with the seasonal change in day length and this complicates the picture further.

An understanding of how and when intertidal midges emerge is not just academic. The burst of emergence activity in each



**Fig 2.** Larval habitat and emergence traps at Breakfast Creek.

fortnightly tide cycle leads to a burst of biting activity each fortnight as well. If the period of emergence can be predicted then so can the period of biting activity. This kind of information would allow people living in areas with a midge problem to plan ahead so that activities which coincide with pest periods can be avoided or so that precautions can be taken. We are hopeful that we will be able to achieve this in the near future in which case a “midge forecast” will be made publicly available on the council’s website.

We have recently come to realise that areas along Brisbane’s waterways where biting occurs don’t always coincide with sites of breeding activity. This raises questions about the dispersal behaviour of *C. ornatus*. Studies near Darwin have indicated that *C. ornatus* females probably have an obligatory dispersal flight away from their

breeding sites and that this can be for kilometres when through natural vegetation. Is breeding activity in Brisbane limited to “hot spots” from which the midges disperse when looking for a blood meal? This will be a focus of our work next season and detailed results of all our work will be published in due course. As with all research, each answer gleaned raises even more questions.

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**Bradley Brown moved the vote of thanks to the speaker.**

**Chairman’s closing statement:**

The next General meeting will be a Notes and Exhibits session at this venue on Tuesday June 15 at 12 noon.

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As Nancy Schellhorn’s Main Business article was unavailable for inclusion in the April Bulletin, it is included herein.

## Main Business from April General Meeting

### Landscape Scale Pest Management

Nancy A. Schellhorn, CSIRO Entomology, Long Pocket Laboratory

The ecosystem service of pest control benefits humans in numerous ways, but primarily through reduced pesticide use. This can benefit primary producers by: 1) lowering input costs; 2) reducing exposure to pesticides by applicators; 3) reducing mortality to non-target organisms, eg. insect predators which provide pest control services; and 4) minimizing the development of insecticide resistance. This can benefit consumers by: 1) keeping food costs lower; 2) keeping food safe; and 3) maintaining food security. This can benefit the environment by reducing harm to non-target organisms, in turn maintaining biodiversity. The value of this pest control service is estimated at more than US\$400 billion per year worldwide (Costanza *et al* 1997).

There are many aspects of agricultural production that is counter to capturing this service. For example, the extensive clearing of perennial habitat, the heavy use of insecticides and only managing pests at the scale of the field (see Schellhorn *et al* 2008). We can better capture this pest control service by considering pest problems beyond the scale of the field, particularly understanding the role of the surrounding landscape. Agricultural landscapes are usually comprised of a mosaic of habitats including crops, grazing land and perennial vegetation. The presence of perennial non-crop habitats, such as forest and forest remnants, are thought to play a crucial role in maintaining populations of natural enemies of pests in agricultural landscapes (Bianchi *et al.* 2006). Even small and isolated fragments of remnant vegetation are thought to play an

important role in maintaining the ecosystem services of pest control. Some of these habitats may be a source of pests and natural enemy immigrants to newly emerging crops. Further, the function of these habitats may change over time. Two examples were presented in the talk; however, here I provide a brief summary of one of the examples, and in one of the landscapes.

In our current work in a major vegetable production region of southeast QLD, Australia, the Lockyer Valley, we asked whether natural enemies occupy forest interior and edge habitat (eg. forest-crop interface) and whether they moved from these non-crop habitats into crops. Focusing on 15 insect predators and 1 herbivore and using bi-directional interception traps, four habitats were evaluated including two ecotones (eg. edge communities): 1) riparian remnant vegetation-crop edge (RF-crop), and 2) forest remnant-crop edge (F-C), and two interior habitats: 3) crop, and 4) native forests. The 15 species of predators included 6 species of aphidophagous coccinellids (*Diomus notescens*, *Coelophora inaequalis*, *Hippodamia variegata*, *Coccinella transversalis*, *Micraspis frenata*, *Harmonia conformis*), 1 species of Melyridae (*Dicranolaius bellulus*), 4 species of aphidophagous hover flies (*Melangyna Austrosyphus* sp., *Sphaerophora macrogaster*, *Simosyrphus grandicornis*, *Episyrphus viridaureus*), 2 species of robber flies (Asilidae spp.), 1 species of brown lace wing (*Micromus tasmanica*) and 1 species of green lacewing (*Mallada signata*). Trapping was done for one whole year (23 May 2007 to 15 May 2008), with collections alternating each week (eg. collecting bottle attached for 7 days, then removed for 7 days). Four key findings emerge: 1) all species occupied all four habitats. However, the forest interior was occupied the least (Figure 1); 2) there is strong species-specific preference for some habitats, *D. bellulus* (red & blue beetle), and *E. viridaureus* (1 of 4 aphidophagous species of hover flies in the study system) occupied the RV edge significantly more than the crop (72% : 28%, RF : Crop,  $X^2=6.89$ ,  $P=0.009$ ;

78% : 22%, RF : Crop,  $X^2=3.98$ ,  $P=0.046$ , respectively), whereas one of the other hoverflies, *S. macrogaster* was the opposite (32% : 68%, RF : Crop,  $X^2=8.32$ ,  $P=0.004$ ); 3) there is significantly more net immigration from RV into the crop than vice versa (ca. 3.7 per day), this is also true for the jassid pest, *Cicadulina bimaculata*, that uses the grassy margins in the 'transition zone' between the crop and remnant vegetation; and, 4) a diversity of forest habitat is important. For example Robber flies, Asilidae spp., occupied the F-C edge significantly more than other habitats ( $X^2=20.54$ ,  $P<0.0001$ ), and had higher net immigration from the forest into the crop ( $F_{1,3}=29.6$ ,  $P<0.0001$ ). Therefore, there are strong links between these non-crop habitats and crops. However, we do not yet know their exact function (eg. a population source or sink or transition resting site), and this is the topic of current investigations. It is not surprising that some pest species also use this non-crop vegetation. Using a suction sampler we found jassids were mostly coming from the grassy margin and mostly the exotic grasses. This information tells us that we may be able to manage the grassy margins by mowing, grazing or burning, hence manage the pest, but we have not investigated whether this is indeed possible.

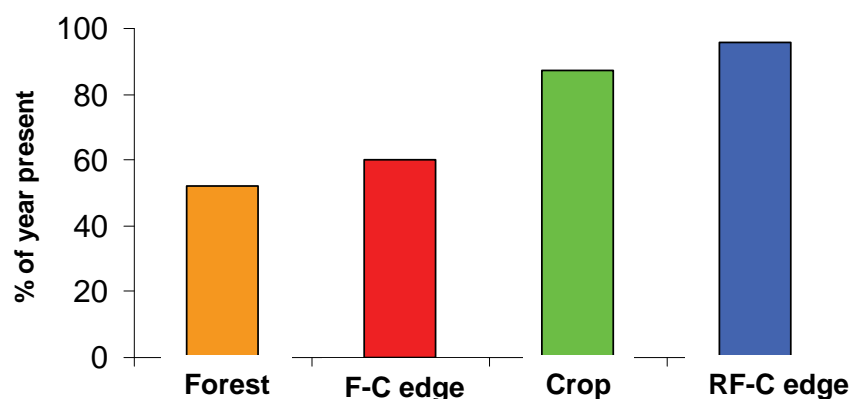
Non-crop vegetation, particularly forest and native perennial vegetation, has a role to play in capturing the private benefit of pest control and the public benefit of biodiversity and conservation. However, pest dynamics will also need to be understood. If our results from this and future studies demonstrate incentive to change current land and pest management practice, then the bigger challenge will be getting growers to change from practices that disrupt natural pest control to those conserving and maintain biodiversity, including native forests and vegetation.

#### Acknowledgements

I'd like to acknowledge Anna Marcora for the data collection, sorting and curation of species and Greg Daniels for identification of hoverflies.

#### References

- Bianchi FJJA, Booij CJH, Tscharntke T (2006) Sustainable pest regulation in agricultural landscapes: a review on landscape composition, biodiversity and natural pest control. *Proceedings of the Royal Society B: Biological Sciences* 273: 1715-1727.



**Fig 1.** The percent of the year each habitat is occupied by the 15 focal predators in the landscape with high (>70%) percent cover of native vegetation.

Costanza R, d'Arge R, de Groot R, Farber S, Grasso M, Hannon B, Limburg K, Naeem S, O'Neill RV, Paruelo J, Raskin RG, Sutton P, and van den Belt M (1997) The value of the world's ecosystem services and natural capital. *Nature* 387: 253-260.

Schellhorn NA, Pearce, S, Bianchi FJJA, Williams DG and Zalucki M (2008) Managing ecosystem services in broad-acre landscapes: what are the appropriate spatial scales? *Australian Journal of Experimental Agriculture* 48: 1549-1559.



## Notice of Next Meeting

Tuesday 15th June, 2010, 12pm

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***STUDENT AWARD***  
***presentation by award recipient***  
***Penelope Mills (UQ)***

***plus***

***NOTES and EXHIBITS***

***'Euploea : those 54 black ugly butterflies'***  
*Murdoch De Baar*

***'An unusual carabid beetle from Mt Etna  
limestone caves near Rockhampton'***  
*Geoff Monteith & Federica Turco*

***'Bush Blitz II to western Qld and NSW'***  
*Christine Lambkin, Noel Starick & Rhys Smith*

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

**ALL WELCOME**

(please sign in at reception before meeting)



## People and Projects

### Insects in public art in Brisbane - Part 2

Geoff Monteith, Queensland Museum

In the November News Bulletin last year (Vol 37 (8):160-166) I wrote small photo-essay on the public art items in Brisbane which use insect images and I tried to compile a little information on the artists who had created them. This provoked quite a bit of interest. Since then a few more have come to light and they are discussed here. Obviously insects are at last reaching their full potential as objects of aesthetic appeal!

**Christopher Trotter** is a Brisbane sculptor who constructs sculptures from discarded machinery pieces and in the previous survey we looked at his mayfly imbedded fossil-like in a giant concrete slab at the roundabout in Oxley Road, Oxley. At the time I was told that he also had a perched dragon fly in a billabong in a Brisbane park, but I was unable to locate this. I have since run this down and it turns out that it is technically within Moreton Shire and not Brisbane proper. It is a truly lifelike, two-metre dragon fly (Figs 1 & 2) perched on a large tree stump in an ornamental pond within a private subdivision estate in the suburb of Bunya. Its wings are plane propeller blades and its thorax is a small motor-mower engine. Its perfect pose shows that the artist spent a long time watching dragonflies before he created it. The spot is open to the public but is quite difficult to find, so I will give precise directions. The lagoon is at 4N on UBD Street Directory Map 117 and the Google Earth coordinates are



1



2

27.363°S X 152.941°E. Drive down the narrow Willow Glen Court and park at the small pull-off when you can see the lagoon on the left. A rough public path circumnavigates the lagoon allowing you to view the sculpture from two sides. It's worth the trip.

Christopher Trotter has another large arthropod sculpture in Brisbane. Called the "Alderley Fossil", it is sited beside the car park in Grinstead Park on the southern bank of Kedron Brook at the point where the Shand Street bridge crosses it (Ref 7E on UBD Map 139; 27.417°S X 153.000°E). It



3



4

is a crustacean similar to the modern shield-shrimps (*Apus* spp) and is presented in the same cut slab treatment (Fig 3) as he used for the Oxley mayfly. It has an extra touch because on the reverse of the slab is a detailed construction diagram by the artist specifying all the machinery parts which went into the piece. With this recipe you can head out to the car wrecker's yard for the bits then build one in your own garage, though I suspect that half way through the exercise you will realise there is a difference between an artist and yourself!

**Russell Anderson** is an artist in Redcliffe who has worked for several years running creative art activities at an adult cerebral palsy day centre called Cascade Place in Hutchinson Street, Redcliffe. Working closely with clients of the centre Russell has designed and built a fantastic, six-metre

high "cartoon" Solar Bug which has recently been installed in Humpybong Park next door to the Centre (Figs 4 & 5). It can be seen at Ref 6R on UBD Map 91; 27.233°S X 153.111°E. It is completely covered with mosaic tiles with numerous embedded LED lights powered by stalked solar panels which follow the sun. It was constructed mostly in Russell's nearby workshop and is made mostly from steel. Even the head, which is made from 12 mm steel plate is so heavy it required a crane to move it during construction. The 25,000 hand-laid glass mosaic tiles were assembled into designs by the clients of the centre. Walking round the centre, one sees much evidence of entomological mosaic tile practice and even the doors of a store shed have at least seven insect forms in the design (Fig 6).



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**Paul Stumkat** worked for many years as a preparator at the Queensland Museum where he designed and built life size models of extinct megafauna for the public displays. About ten years ago he left to go freelance and now lives on a bush block near Queen Mary Falls where he has become a successful sculptor, working in both wood and sandstone. Last year two of his 1.5 metre long, sandstone sculptures of insects were installed at the Mt Coot-tha Botanic Gardens in the Children's Discovery walk area. One depicts the rhinoceros beetle, *Xylotrupes ulysses* (Fig 7) and the other shows the giant burrowing cockroach, *Macropanesthia rhinoceros* (Fig 8). They are designed for children to sit upon their backs (Fig 9) and the smooth patina of wear indicates that they are a great success. Figure 10 shows Paul working on the cockroach. If you would like Paul to sculpt your favourite insect for your garden then visit Paul's website at [www.stumkatstudios.com](http://www.stumkatstudios.com)

While not perhaps a piece of public art in the true sense, the **Queensland Museum** is currently sporting what might be one of the largest photographic images of a butterfly shown in Queensland. The image of a Cape York Birdwing (*Ornithoptera primaus*) wraps around the glass wall of the entrance foyer above the main entrance (Fig 11) and is there promote the current exhibition of "The Butterfly Man of Kuranda". It is 9 m across and was designed by museum designers Chris Hall and Baden Phillips on the basis of a photograph of a specimen in the QM collection. It was printed onto 4 strips of adhesive vinyl by Insignature Signs of South Brisbane and required a mobile boom crane to be installed.

If you know of examples of insect art on display in public places in Queensland that we have missed send in a picture and some details.



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### **International Invasive Ant Management Workshop, 27-29 April 2010, Darwin, Australia**

An invasive ant management workshop was held at the CSIRO Tropical Ecosystems Research Centre in Darwin, Australia on 27-29 April 2010. The workshop aimed to facilitate networking among people from around the world involved in invasive ant management, as well as to improve the incorporation of research and ant biology into management. This event provided a perfect opportunity for researchers and managers to interact, share information and establish working relationships.

The workshop was attended by 54 people from 10 countries. It featured 36 presentations covering a wide variety of topics, from basic descriptions of ongoing ant

management programs through to the latest research into invasive ant biology and ecology, as well as technology being developed for ant management. Such technology included high resolution helicopter-mounted sensors scanning for visual and thermal signatures of ant colonies from a height of 400 feet. If successful, this technology will allow the assessment of much greater areas for Red imported fire ant, *Solenopsis invicta*, than is possible using current ground-based methods.

A half day field trip gave delegates the opportunity to view numerous invasive ant species established in northern Australia, as well as to visit Howard Springs Nature Park which has been the focus of over a decade of invasive ant research, particularly focused on the African big-headed ant, *Pheidole megacephala*. Workshop participants were also shown the CSIRO Invertebrate Biodiversity laboratory which houses Australia's most comprehensive ant collection, containing 4500 Australian species and another 1500 from overseas.

The workshop didn't aim to produce conclusions or recommendations, rather stronger networking among ant management programs, and the forging of ties between researchers and managers. The high number of emails among delegates, particularly the dissemination of much "grey literature" after the event indicates that the workshop has been a great success. Many workshop presentations are available to all on the internet at [www.littlefireants.com](http://www.littlefireants.com) – go to the link displaying the workshop name.

For further information about the workshop contact:

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### ***Euploea* - those 54 black ugly butterflies: A picture series for the June Notes & Exhibits**

Murdoch De Baar

As part of the Notes and Exhibits at the next ESQ meeting I will present a series of pictures of Crow butterfly (*Euploea* spp., Lepidoptera: Nymphalidae) specimens from my collection, with the intention of poking a stick into Pandora's species box.

There are apparently 54 species of *Euploea* (Ackery & Vane-Wright, 1984). The genus is restricted mainly to the Indo-Australian Region and also includes Seychelles, Mauritius, Reunion (not Madagascar) & up to the Himalayas and across to China, then out towards Tahiti in the south Pacific Ocean as the most easterly point. These butterflies have traditionally been regarded as 'black things with a few white spots'.

I will present views of some extremes of colours as well as the traditional dark browns, plus subspecies galore (and God, at his best, prodding *Euploea* taxonomists).

### **Reference**

ACKERY, P.R. and VANE-WRIGHT, R.I. 1984. Milkweed butterflies. 425 pp. British Museum (Natural History), London.

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### **News from USDA Australian Biological Control Laboratory**

The National Program Leader for Weeds in the USDA/ARS, John Lydon, visited the labs in May. John discussed progress on various projects, met with CSIRO staff and toured field sites in southern Queensland. ABCL is busy consolidating 25 years of research activities (curated specimens and data sheets), for the impending move to the new Boggo Road Ecosciences Precinct later this year. News from our collaborators in Fort Lauderdale, Florida, detailed the progress of the insect agent from Queensland that was released on *Melaleuca quinquenervia* in 2009. The gall fly *Lophodiplosis trifida* is spreading rapidly across southern Florida and is having a major impact on this trees species.

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### **2010 ESQ STUDENT AWARD**

The annual Entomological Society of Queensland Student Award is open to Honours, Diploma and Fourth year Degree students who have submitted their report or thesis during the current or previous academic year. The Award is sponsored by the Tropical Fruit Fly Research Group, Griffith University. The recipient of the Award receives \$250.

The recipient of the ESQ Student Award for 2010 is **Penelope Mills** for her Honours Scientific Report entitled "How many species are there in the *Apiomorpha minor* species-group (Hemiptera: Sternorrhyncha: Coccoidea)? Morphological, DNA sequence and chromosomal evidence", completed under supervision of Dr Lyn Cook, University of Queensland.

Penelope will receive her Award, and present her work, at the General Meeting on Tuesday 15th June.



## ENTOMOLOGISTS IN ACTION

In this edition .....

### **Brisbane City Council Mosquito Management Group**

by Mike Muller and Martin Shivas

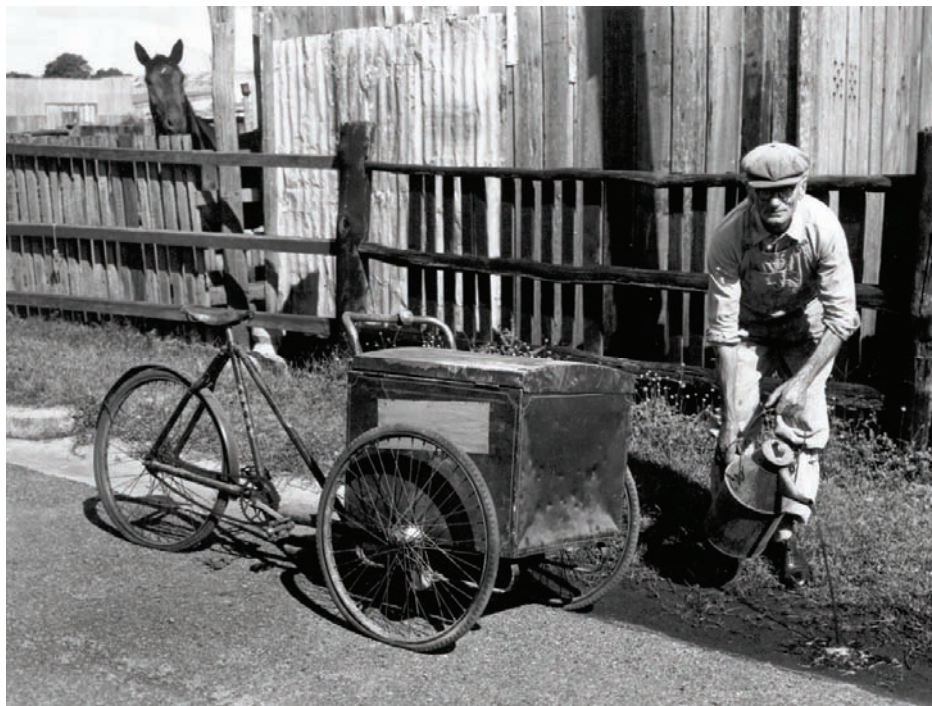
Mosquito management in Brisbane has a long history. The first formal mosquito survey in the city area was carried out in 1912 by Entomologist Lance Cooling, and this led to mosquito regulations in the same year. In 1921, these were formalised as the "Mosquito Prevention and Destruction Regulations". The City of Greater Brisbane was formed in 1925, and in 1928 the City Council appointed Dr Ronald Hamlyn-Harris as the City Entomologist, in response to concerns about mosquito control. Hamlyn-Harris and his team started with a horse and buggy, graduated to tricycles in 1932 and motorcycles in 1934. The program targeted mosquito larvae using various oils and kerosene mixtures. He later

became a lecturer at the University of Queensland, and one of his students in the late 1930s was Dr Elizabeth (Pat) Marks, who would become Australia's acknowledged mosquito authority in a distinguished career over many decades.

Following the Second World War, amid concerns about malaria associated with returned servicemen, a complete survey of mosquitoes in Brisbane was undertaken over a three year period, and Pat Marks was heavily involved in this. Larvicides in use at the time included DDT and malariol. In the 1950s, in addition to larvae control, the Council used fogging trucks to control



**Fig 1.** The Brisbane City Council Vector Services team and equipment, 1959.



**Fig 2.** A staff member of Vector Services demonstrating the oiling can and tricycle used for mosquito control. Date unknown, possibly 1940s.

adult mosquitoes. Staff were also carrying out house to house surveys and “remedial action” to eliminate *Aedes aegypti*, the vector of dengue. The last outbreak of dengue occurred in Brisbane in 1943, and *A. aegypti* has been absent from Brisbane since the 1950s.

By 1964, under the direction of the Chief Health Officer Doug Mabbett, the Brisbane City Council mosquito control group had a permanent staff of 50. The main target species were the saltmarsh pest mosquito *A. vigilax* and the freshwater pest species *Culex annulirostris*. However, Council was also spending £80,000 annually on control of *C. fatigans* (= *quinquefasciatus*) in man-made polluted sites. Aerial mosquito control measures started with an unsuccessful trial for adult control in 1970, with some

environmental backlash at the time. By the mid-1970s, aerial applications of a Temephos-based larvicide from biplanes over saltmarsh areas had become routine. Ground crews used the same product across the city to target larvae from trucks and sidecar motorcycles, and this took the program up to the mid-1990s.

At this time, two alternative products became available for mosquito management. These were the larvicides Bti (*Bacillus thuringiensis* var *israelensis*) and the insect growth regulator (S)-Methoprene. These products are highly selective for mosquito larvae and environmentally sound for use in wetlands. They are now the mainstay of the mosquito control program in Brisbane, in both the ground-based program using 4WD trucks and quad bikes, and in the aerial



**Fig 3.** A duster used for applying insecticides by Vector Services. Date unknown.



**Fig 4.** A demonstration of modern pest control equipment used by Dept of Health, BCC, in front of City Hall, 1960. Chief Health Officer J D (Doug) Mabbett is on the steps admiring the handiwork of his men. This was an annual feature of National Health Week.

saltmarsh program using helicopters. Fogging and ULV applications for adult mosquito control are not carried out routinely but are used for rapid response as required by mosquito pest pressure.

There are now approximately 20 permanent staff in the mosquito management group. They work their way through 3,000 recognised potential mosquito breeding sites on public land listed on truck runs, monitoring for larvae and treating as required. Two technical staff are dedicated to operating light traps to monitor mosquito populations, and respond to and investigate complaints from the public. They also carry out pre- and post-treatment checks around the aerial

operation, and after each treatment manage the downloading of the spray paths from the DGPS units in the helicopters for mapping on aerial photographs.

These days, Brisbane City Council is unique in Australian local government with the employment of two Medical Entomologists in its Mosquito Management Group, based at Green Square in Fortitude Valley. **Mike Muller** commenced with Brisbane City Council in 1995. Before that, Mike was with CSIRO for 23 years working with biting insects that transmit arbovirus diseases in livestock. After starting with CSIRO in 1972, Mike became a specialist in the *Culicoides* biting midges under the



**Fig 5.** Mike Muller dipping for *Aedes vigilax* saltmarsh mosquito larvae on Tinchi Tamba Wetlands.



**Fig 6.** Martin Shivas checking his emergence traps for *Culicoides ornatus*.

guidance of Alan Dyce at the McMaster Laboratory in Sydney, as part of planning for the possible introduction to Australia of bluetongue viruses that are transmitted ruminants by biting midges. This was an excellent preparation for the exciting times after bluetongue virus was identified in Australia in 1977. By this time, Mike had transferred to the Long Pocket Laboratories in Brisbane, to work in the CSIRO team there with Harry Standfast and become educated in the ways of mosquitoes.

After CSIRO wound up its arbovirus vector work in 1995, Mike was appointed as the Medical Entomologist with Brisbane City Council. He provides technical advice for the operation of the Council mosquito management program, looks after the aerial program, and gets to answer all the curly enquiries about mosquitoes and other bites from the public. He is the Secretary of the Mosquito and Arbovirus Research Committee (MARC), a group consisting of the Councils from the Tweed to the Sunshine Coast, as well as Queensland Health. MARC employs a full time scientist at QIMR and supports high level research associated with mosquito biology and control at QIMR and Griffith University.

Mike's background in biting midges enabled him to recognise something unusual was happening in October 2004 when there was a sudden burst of complaints about biting insects around Oxley Creek and parts of the Brisbane River in the western suburbs. This was quickly identified as being due to *Culicoides ornatus*, a species that had not previously been recognised as far south as Brisbane.

The rapidly escalating problems with this species led to Brisbane City Council appointing **Martin Shivas** as a Medical Entomologist in 2008. It was coincidental that *C. ornatus* had appeared in Brisbane as Martin had completed his PhD on the biology of this species while at the Northern Territory University in Darwin in 2000 and

had returned to live in Brisbane in 2004. Martin also had two years researching the dispersal behaviour of this species while with the Medical Entomology Branch of Territory Health Services between 1999 and 2001.

Martin's original introduction to entomology was in the 1970's as an undergraduate in the departments of entomology and parasitology at the University of Queensland in the days when these disciplines still had their own dedicated departments and street marches were *de rigueur*. Sadly, those days of classical biology and idealism are long gone! Undergraduate fascination with all things creepy-crawly led to Honours and then Masters in the Department of Parasitology under the tutelage of the department's medical entomologist Doug Moorhouse. The latter study was on the biology of Brisbane's other well known pest biting midge *Forcipomyia (Lasiohelea) townsvillensis*.

A move to Sydney in the early 1980's led to a diverse series of jobs including studying sun cancer in 'naked' mice at Sydney University, identifying spiders at the Australian Museum and breeding sheep blowflies at the University of NSW (not for the faint hearted!). With the collapse of the wool industry in the early nineties sheep blowfly research dried up. A timely advertisement for a PhD scholarship in Darwin provided a much more exotic option than unemployment in Sydney and a short time later Martin was knee deep in mangrove mud looking for midges and looking out for crocs. Martin's current position with Brisbane City Council is to undertake research on the *C. ornatus* problem in Brisbane with the aim of developing effective management options. No crocs but plenty of challenges!

(For some of the early answers to those challenges, see the report of Martin's address to the May meeting of the Society on page 31 of this Bulletin).

## NOTICES

### Correction to the Treasurer's Annual Report for 2009

The Treasurer's Annual Report for 2009 was printed in Volume 37, issue 10 (January-February 2010) of the ESQ News Bulletin. On page 188 the income from the Carrick Grant should have shown an additional \$1000.

Desley Tree, Treasurer



**15th International Congress of Myriapodology  
Brisbane, Australia, 18-22 July 2011**

<http://www.15icm.org>

Myriapodists study multi-legged arthropods (centipedes, millipedes, Symphyta and Pauropoda) and velvet worms (Onychophora). These little-studied groups have been shown to be excellent subjects for studies in evolution, biogeography, developmental genetics and environmental monitoring. The 2011 myriapodology congress in Brisbane will have a special focus on the myriapod fauna of Asia and the lands and islands of the Pacific basin.

**Registration opens 15 June 2010 through the conference website  
<http://www.15icm.org>**

## WANTED

### CONTRIBUTORS FOR THE ESQ NEWS BULLETIN

- *Write about your entomological experiences, activities, projects, observations, discoveries, stories and travels*
- *Tell us about your professional entomology-based team or work-group (contribute to the 'Entomologist's in Action' section)*
- *Review an entomological book or other information resource (or perhaps you would like your book reviewed?)*
- *Let us know about your upcoming conferences, seminars, workshops, meetings and publications*

**Contact Justin Bartlett, News Bulletin Editor, for more information  
[justin.bartlett@deedi.qld.gov.au](mailto:justin.bartlett@deedi.qld.gov.au)**

**AUSTRALIAN ENTOMOLOGICAL SOCIETY'S  
41st AGM & SCIENTIFIC CONFERENCE**

Entomology for Australia's Future

September 26-30 2010

Perth, WA



The Organizing Committee, Sonya Broughton, Modika Perera, Maria José de Sousa Majer and Jonathan Majer invite you to the 41st AGM and Scientific Conference, which will take place at the Vines Resort in the Swan Valley, just north of Perth.

Our conference logo is the Western False Saturn Moth or Dryandra Moth Carthaeidae, *Carthaea saturnioides*. Feeding on Grevillea and Banksia species, the moth's activity season is August to December, so you may have a chance to see it in its native range.

**The conference will have five themes:**

- *Invasive species and biosecurity*
- *Threats to biodiversity and their amelioration*
- *Food safety*
- *Insect biology and ecology*
- *Systematics and taxonomy*
- *Integrated pest management and grain production systems*

There will also be a half-day mid-conference tour of the Swan Valley. This relaxed region is where you'll find rolling vines, meandering waterways and lush natural bushland, as well as award winning wineries, breweries and food producers. As Western Australia's oldest wine growing region, many vineyards are still owned by descendants of European emigrants. Many wineries offer cellar door tastings, or if you're partial to a pint, there are four microbreweries offering award winning drops.

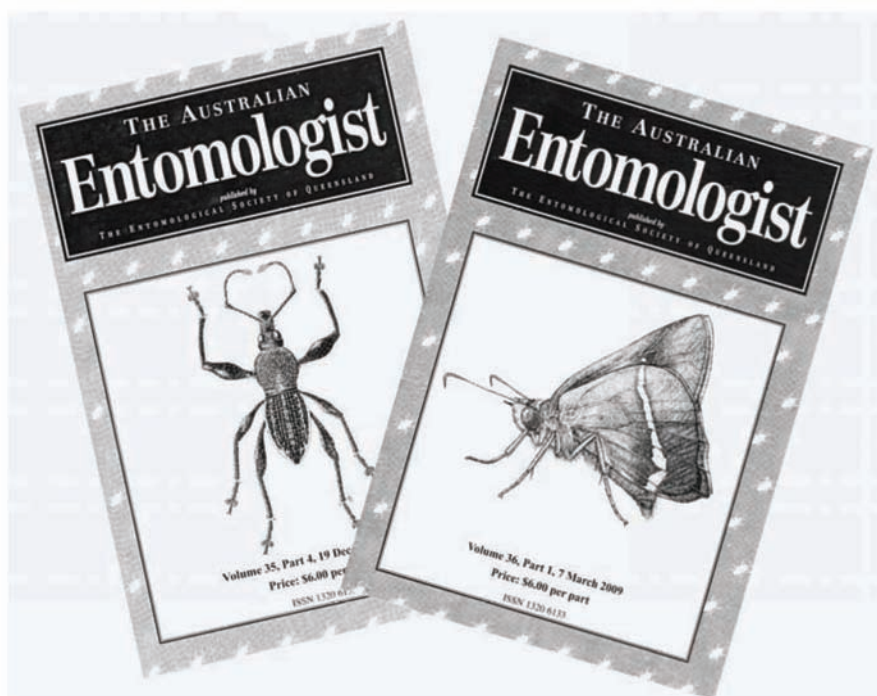
We look forward to seeing you over here in the West.

[www.aes2010.org/](http://www.aes2010.org/)

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A quarterly, illustrated magazine of original research on  
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Commenced in Sydney by Max Moulds in 1974, the magazine is now published in Brisbane by the Entomological Society of Queensland and is recognised as one of the leading outlets for quality, refereed research on native insects in Australia. In particular, it publishes much of the new information on Australian butterflies with more than 200 papers since inception. Attractively presented on quality paper, it carries much colour work, while the cover features illustrations by Australia's top insect artists.

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## **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		
SEP—Monday 13th		
OCT—Monday 11th		
NOV—Monday 8th		
DEC—Monday 13th		

## **SOCIETY SUBSCRIPTION RATES**

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

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# **THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND**



## **NEXT MEETING**

**12:00pm ~ TUESDAY 15th June**

Large Conference Room  
CSIRO Long Pocket laboratories  
120 Meiers Road Indooroopilly

Main Business

## **STUDENT AWARD PRESENTATION plus NOTES and EXHIBITS**

**VISITORS WELCOME**

(please sign in at reception before meeting)

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## **NEXT NEWS BULLETIN**

Volume 38, Issue 4 (June/July 2010)  
due early August

**CONTRIBUTIONS WELCOME**

**DEADLINE - Thursday 22th July**

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