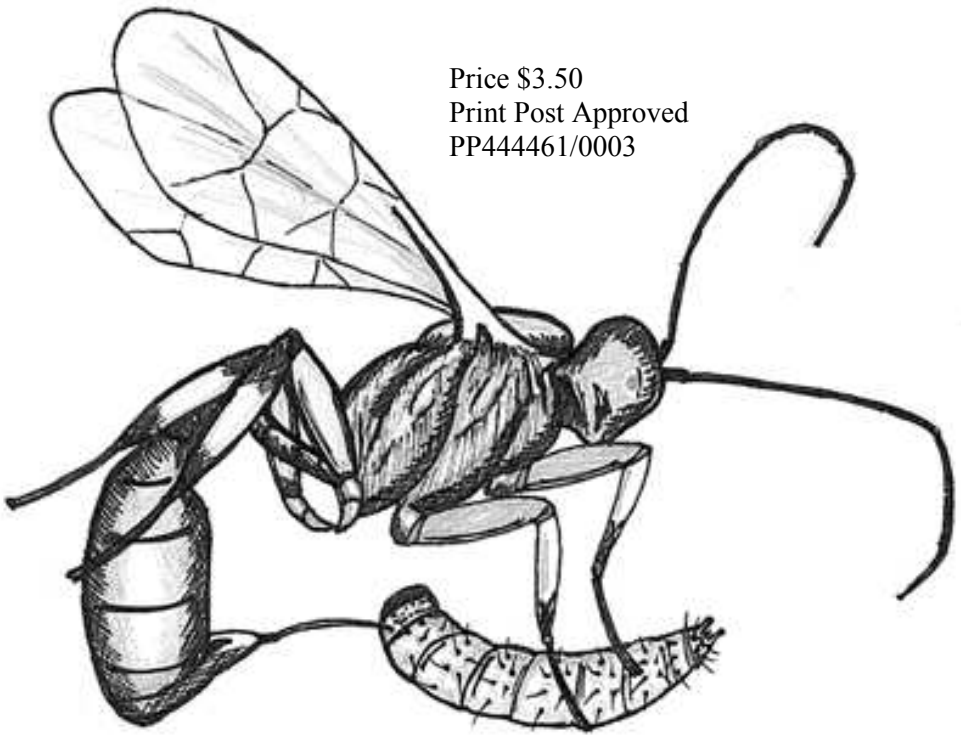
ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN



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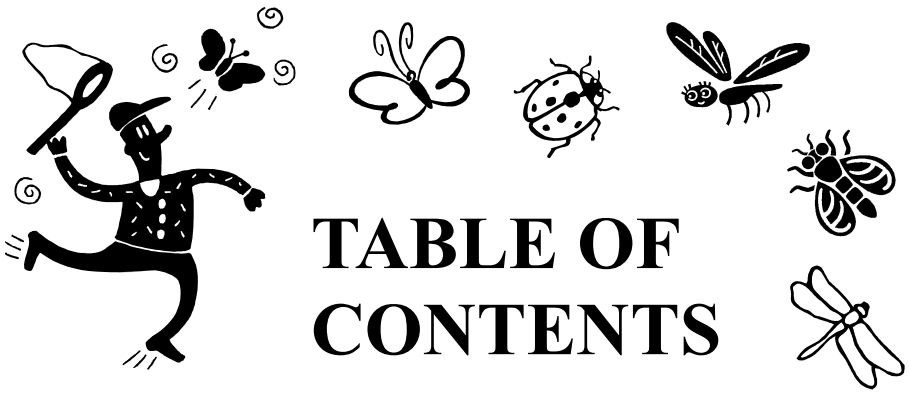
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. Membership is open to anyone interested in Entomology. The Society promotes liaison among entomologists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

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

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

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

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



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The Entomological Society of Queensland
Minutes of General Meeting 8 December, 2008

Held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on 8 December 2008, 5:00pm.

Chairman: Mike Furlong

Attendance: Mike Furlong, Richard Bull, Christine Lambkin, Noel Starick, Geoff Monteith, Geoff Thompson, Anna Marcora, Matthew Purcell, Tim Heard, Bronwen Cribb, Desley Tree, Judy King, Judy Grimshaw, Leon Hugo, Murdoch De Baar, Yen-Po Lin, Lyn Cook, Penny Mills, Helen Nahrung, Lynda Perkins, Rachel McFadgen, Lynita Howie, John Moss.

Visitors: Karen Bell, Caroline Fewtrell, Lloyd Dosdall, Nate Hardy, Juan A.Villanueva-Jimenez.

Apologies: Richard Zietek, Morris McKee, Stacey McLean, Gio Fichera, Peter Allsopp, Ross Kendall, Graham Forbes, Andrew Hulthen.

Minutes: The minutes of the last General Meeting of November 10th, were circulated in the News Bulletin Vol. 36, Issue 8, 2008.
Moved the minutes be approved: Christine Lambkin
Seconded: Geoff Thompson

Membership Nominations and Elections:
Dr Bob Mesibov and Zara Ludgate have been nominated and their nominations approved by Council. In accordance with Society rules, the Chairman put the nominations to the members and called a show of hands for their election. All were in favour.

General Business:

- Announcement of 9th International Symposium on Thysanoptera and Tospoviruses' to be held 31 August to 4 September 2009 at Sea World, Gold Coast QLD.
- The Chairman made an appeal to members for nominations for the positions of Treasurer and News Bulletin Editor for 2009.

Main Business:

Notes and Exhibits
Presentation #1 by Geoff Thompson (Queensland Museum):

A piece of entomological sporting memorabilia

After our much-loved colleague, Ross Storey, passed away in June last year, Geoff Monteith gave me a signed cricket bat that had come from Ross's house. The bat bears a small, engraved plate – "To Ross from His Mates, for Services as Coach, Manager and Sole Selector". This brought back many memories for me.

I started work as a research assistant to the late Tom Woodward in January, 1975 and shared a laboratory with Ross, outside Tom McRae's room. Ross was kind, always cheery, constantly funny and mates with almost everyone. He would come in each morning, sit down and say "Now will I get out me bees or have a quick drool over me dungies?" He would then get out a drawer and move his head over its entire surface, looking at each unit tray and making loud slurping noises the whole time. I shared some of his tastes in alternative music. Ross constantly sang snippets from a then unfamiliar early album "We're Only in it for the Money" – "What's there to live for, Who needs the Peace Corps"; probably to try and annoy Tom McRae. On Friday afternoons he would announce "I've got a thirst you could photograph! Are you coming down the RE?"

Ross was offered a position with DPI Mareeba, by Ian Cunningham, about 18 months after I started work at UQ. Once I started work with Geoff Monteith at Queensland Museum in 1982 we would usually see Ross on our yearly North Queensland collecting trips. It was fabulous to come out of the rainforest after strenuous, often-wet backpacking and enjoy Ross's home comforts for a short interlude. In the early days Ross would usually have a chicken curry waiting for us but later it became a tradition for me to cook up a big feast; a tradition we were able to reprise just a few days before he went into hospital last May.

When preparing Ross's obituary Geoff Monteith unearthed two photos of a CSIRO Long Pocket vs. UQ Entomology Department cricket match that I remember being in. I was fairly useless at cricket but they wanted me in the team because of my famous cricketing namesake, then at the height of his fame.

The photos were dated 1976 on the back. On checking the News Bulletin for that year I found this entry.

The social calendar of the University Department of Entomology has lately been taken up with long standing cricket engagements. On April 7, they defeated the Biochemistry Department by 10 runs (121 to 111) and on April 11, continued their run of success by beating C.S.I.R.O. Long Pocket also by 10 runs (127 to 117). The season concluded on the 26th April with a resounding victory over the University Zoology Department who scored 47 all out to the Entomologist's 105 for 9. The latter matches were held together with a barbecue lunch and most pleasant days were had by players and their families alike.

The bat is signed by almost every member of the UQ Entomology Department at the time, most of them not cricketers and no members of opposing teams. I believe it was signed as a memento for Ross after the successful series of three matches and just before he left for North Queensland.

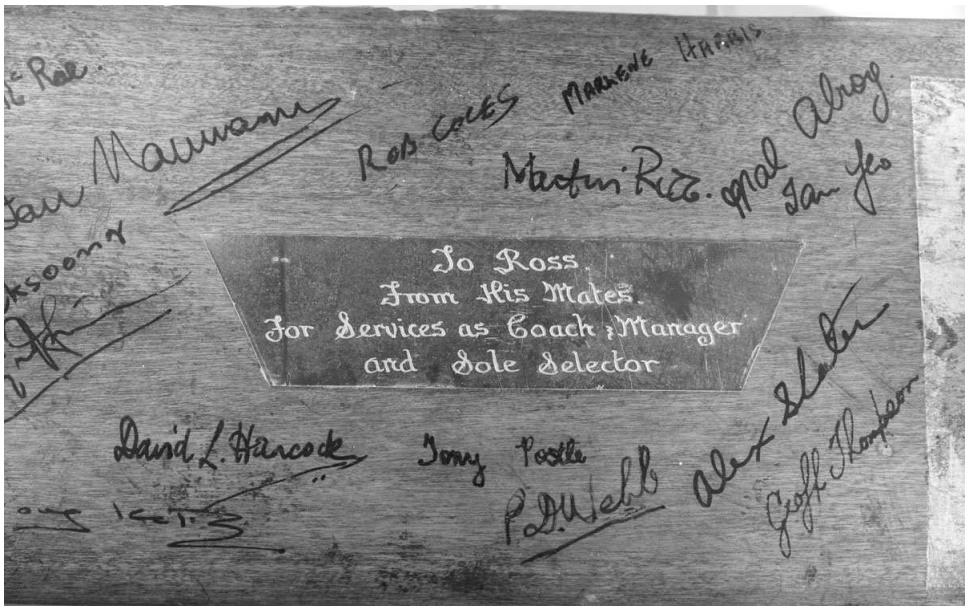
The Bat

The bat bears the following signatures, bottom to top:- Ruth Crombie, Pat Marks, Harry Lake, Patricia Haas, Peter Samson, Sam Waladde, Kev Lambkin, Cynthia Castle, Clyde Wild, Tom McRae, Ian Naumann, Visutr Sucksoong, Doug Kettle, David Hancock, Rob Coles, Tony Postle, Marlene Harris, Martin Rice, Phil Webb, Mal Alroy, Ian Yeo, Alex Slater, Geoff Thompson, Peter Dunlop, Penny Edwards, Alison Burrows, Geoffrey Burrows and Bryan Cantrell.

I remember all these people and will treasure the bat as a reminder of good times and great mates, especially Ross.

Geoff Thompson

Lower section of the bat



The central plaque with signatures

Top section of the bat

The 11th April match being watched by (left to right) two unidentified, Ross Storey, Krystal, Harry Standfast and Tom Woodward.

Posed group from CSIRO Long Pocket Laboratories vs. UQ Entomology Department, 11th April, 1976.

Notes and Exhibits
Presentation #2 by Matthew Purcell
(USDA ARS Australian Biological Control Laboratory):

Video of the release site of *Neomusotima conspurcatalis* (Lepidoptera: Pyralidae) for the control of *Lygodium microphyllum*

In 2008, the pyralid moth *Neomusotima conspurcatalis*, a native insect from Australia and Asia, was released on Old World Climbing Fern, *Lygodium microphyllum*, in Florida where this fern is a serious weed. Recent video footage at a release site at Jonathon Dickenson Park north of Fort Lauderdale shows massive defoliation of extensive stands of the climbing fern and large numbers of adults flying throughout the site. Given that so far this establishment has occurred at only one site, it is too early to claim success though the results are extremely promising. This moth was collected, colonised and evaluated by staff at the USDA ARS Australian Biological Control Laboratory in Brisbane before it was shipped to quarantine facilities in the US. A related moth from Queensland, *Cataclysta camptozonale*, was released in 2005 but failed to establish. An eriophyid mite from northern Queensland, *Floracarus perrepae*, was released in 2007.

The pyralid moth, *Neomusotima conspurcatalis.*

Stands of the climbing fern *Lygodium microphyllum* defoliated by the pyralid moth *Neomusotima conspurcatalis* in Florida, USA.

Notes and Exhibits
Presentation #3 by Christine Lambkin & Noel Starick
(Queensland Museum):

‘Raining’ Trees

On the 4th November Chris was invited to contribute to a Channel Ten Totally Wild story on ‘Raining’ Trees. Filming took place at Closeburn in the Samford Valley the next day. Chris expected to find a mist from spittlebugs, either *Philagra parva* with a curved horn on the front of the head or the beetle-like *Bathylus albicinctus*. However, while the extensive ‘rain’ filling a number of buckets was caused by huge numbers of spittlebugs, it was clear that neither of these species were responsible. Hundreds of nymphs were seen surrounded by spittle on vines climbing through the rainforest, but few adults were observed, and only 2 collected. Chris collected some of the vine and later Trevor Clifford had that verified by the Queensland Herbarium as Native Wisteria, *Callerya megasperma* (transferred from *Millettia*) (Fabaceae). The Totally Wild crew took Chris to another site with ‘raining’ trees near the Brisbane suburb of the Gap.

Several days later, Chris received a call from Paul Farrell who needed information checked for an article on ‘raining’ trees that he was writing for the Moggill Creek Catchment Group newsletter. Paul told Chris of another two sites with ‘raining’ trees in Upper Brookfield. Chris and Noel visited one of these, the property of Michelle Higgins, to take photos and collect more specimens. Thousands of nymphs were observed packed closely (Fig. 3) along Native Wisteria surrounded by masses of spittle (Fig. 4) from which a continuous rain fell, saturating the ground and vegetation. Many adults were sitting on vegetation (Fig. 1) and flying in the sun. Michelle was able to inform us that this activity had been observed for several years, but 2008 was the most intense. We visited another site in Upper Brookfield where the rain had formed large puddles beside the road.

Use of Murray Fletcher’s web-based keys http://www.agric.nsw.gov.au/Hort/ascu/cercopid/aphrophor/amarusa.htm and comparisons with types in the QM collection determined that the spittlebug was Australia’s largest spittlebug, *Amarusa australis* (Jacobi) (Hemiptera: Aphrophoridae). Interestingly, Murray considered this species to be rare in collections. Indeed the QM only has 6 specimens, including the holotype (Fig. 2) and allotype, two collected from Cheese trees (*Glochidion* sp.: Euphorbiaceae). There are another 7, even larger, specimens from North Queensland in the QM that may be a new species.

There are 17 species of Aphrophoridae in Australia, many of them with spittlebug nymphs. *Amarusa* is distributed in Indonesia and the Philippines, but only one species, *A. australis*, is found in Australia in Queensland and NSW. Another family the Cercopidae (9 species in Australia) or froghoppers have nymphs that form spittle, but many of them live underground feeding on the roots of plants.

Figure 1. Adult of Australia's largest spittlebug, *Amarusa australis* on Native Wisteria. Photograph: N. Starick. **Figure 2.** Holotype of *Amarusa australis* at QM. Photograph: G. Thompson. **Figures 3-4.** Nymphs of *Amarusa australis* packed closely on Native Wisteria, surrounded by masses of spittle, forming drops of 'rain'. Photographs: N. Starick.

Notes and Exhibits
Presentation #4 by Geoff Monteith (Queensland Museum):

The mystery of the arctiid moth, *Cyana meyricki* Rothschild - An Insect Houdini

Harry Houdini, was a famous "escapologist" from the early 1900s who specialised in getting himself placed into extreme bondage situations, usually involving combinations of chains, handcuffs, padlocks and straight-jackets, often ending up being also enclosed in a cage or suspended from a rope. Beautiful assistants and impartial observers trussed him up before the audience, then, at the roll of the drums, he miraculously escaped. My story today is about a caterpillar which, like Harry, gets itself suspended on ropes inside a cage as a (virtually straight-jacketed) pupa, and then escapes its prison. Unlike Harry, the caterpillar gets into its predicament without the assistance of glamorous attendants, and even manages, like Malcolm Fraser, to leave its pants outside in the process. While we know how it eventually escapes (as an adult moth), the real mystery lies in just how the caterpillar gets itself into its particular bondage in the first place.

Figure 1. The arctiid moth, *Cyana meyricki.*

The moth in question is the lithosiine arctiid, *Cyana meyricki* (Fig. 1), an orange and black mimic of distasteful lycid beetles. It is figured in colour in Ian Common's *Moths of Australia* under the name *Chionaema meyricki* (Plate 18). It is not common in collections because it rarely comes to light, presumably because it is part of a diurnal mimicry complex. The stage which more often comes to notice is the curious pupal "cage" (Figs 2, 3, 4), which is usually found with an empty pupal exuvium suspended inside on threads of silk. I've found these puzzling structures many times over the years, and they are sometimes brought into museums by mystified members of the public (or, these days, emailed in as images!). Twice we've encountered cages with living pupae, which, when reared out, have enabled the owner to be identified.

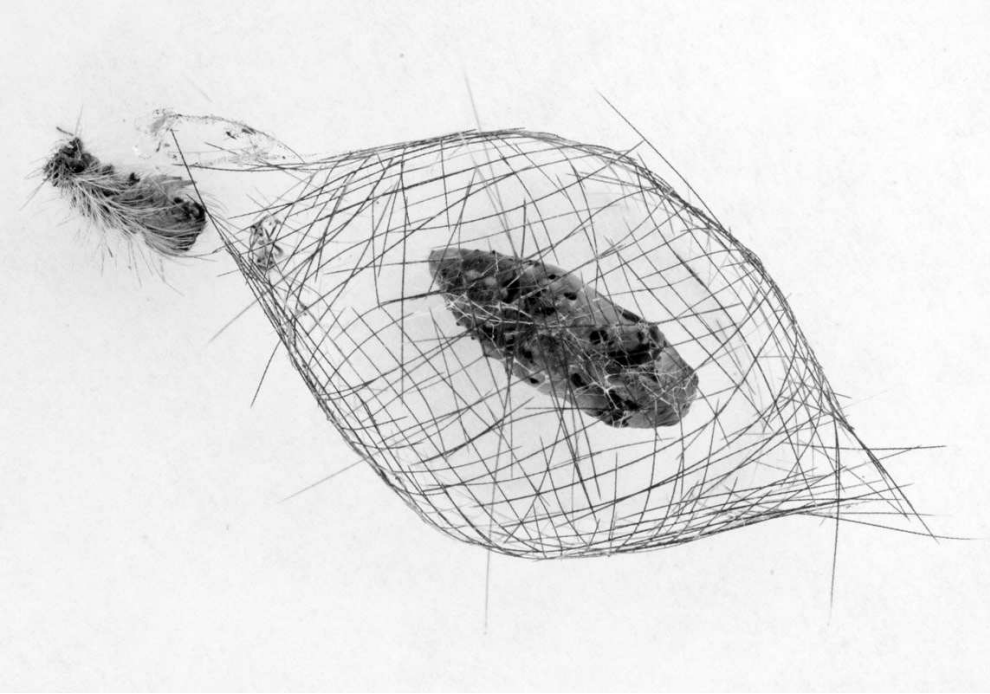


Figure 2. Pupal cage of *Cyana meyricki,* dorsal view. Head of pupa is to the right. Last larval skin is outside the cage at left.

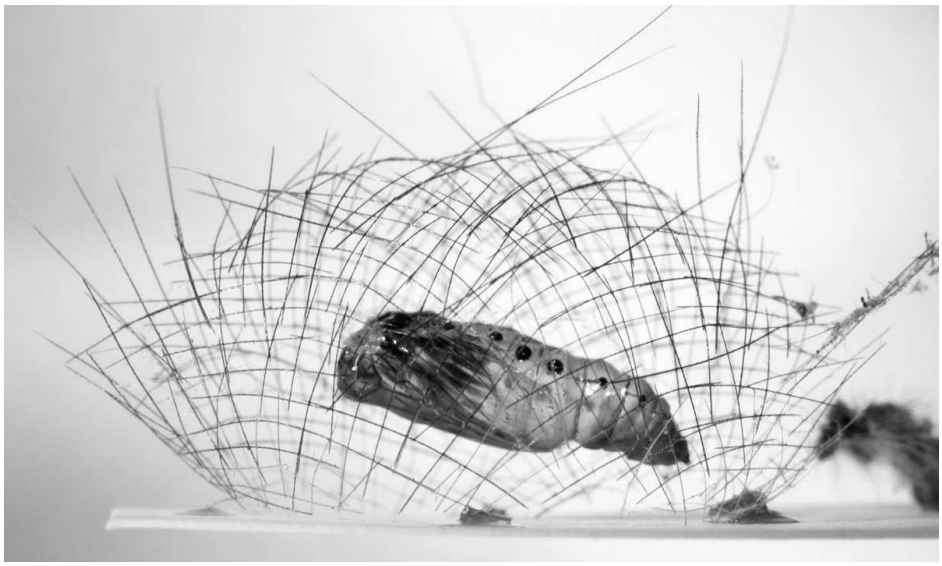


Figure 3. Pupal cage, lateral view. Head of pupa to the left.

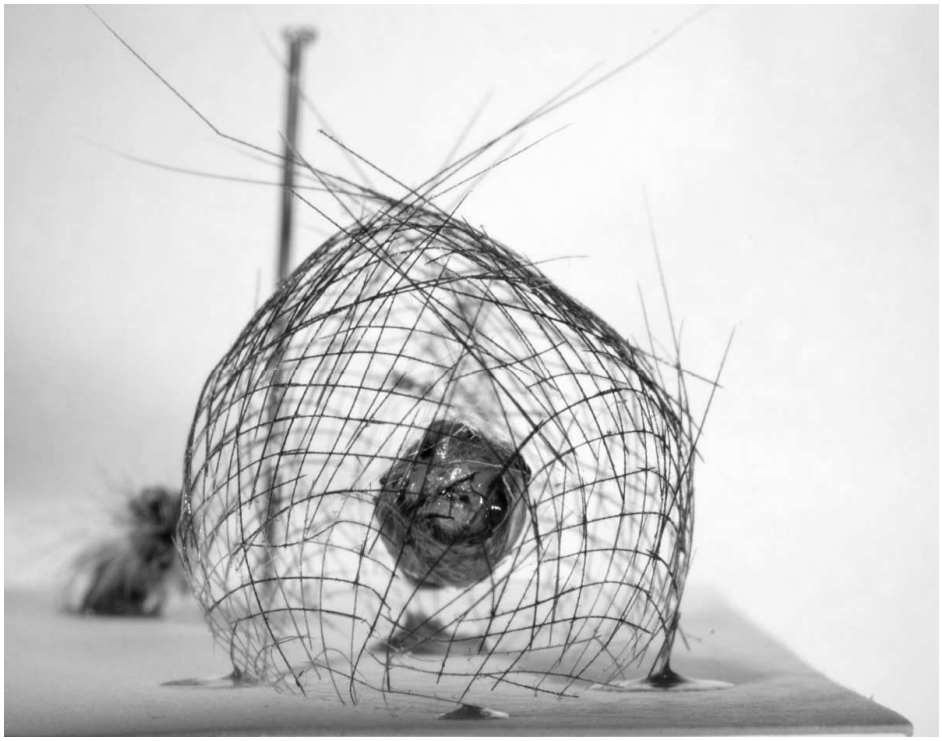


Figure 4. Pupal cage, end view.

The pupal cages (circa 30mm by 20mm) are always constructed on a flat surface in a concealed space, often on the underside of loose sheets of bark on a dead tree, or on undersides of wood on the ground, and sometimes in dark corners on the outside of older wooden buildings. The structure of the cages is remarkably regular. Under the microscope the "bars" of the cage are seen to be long, stiff insect setae, each ornamented with a spiral series of fine, sharp serrations (Fig. 5). A curved row of upright setae, each with their pointed basal end pushed into the substrate (or silked to it), forms each side of the oval cage. The setae curve upwards, outwards and then inwards so that the apices of the two rows join along the dorsal midline, thus closing the cage. Several rows of horizontal setae run along both sides of the cage, crossing the erect setae at roughly right angles. The horizontal setae on each side converge at each end of the cage to form points consisting of projecting ends of setae. Both horizontal and vertical setae are spaced very regularly so that many of the apertures in the completed cage are almost perfect squares.

Figure 5. Detail of cross bars of pupal cage.

High power magnification reveals that almost every cross-intersection of setae is bound together by a thread of silk. It also shows that individual setae are too short to reach from the substrate to the upper midline of the cage, so the vertical side bars of the cage actually consist of two setae joined end to end to give the required length. Similarly the horizontal bars consist of two or more setae laid precisely end to end to reach the full length of the cage. The completed cage is remarkably strong and rigid, and is under some tension due to the setae being curved and held in place by the silken hitches. If partly depressed by a finger tip, the cage will spring back into shape when released.

Inside the cage, the pupa hangs in space, perfectly in the centre and thus equidistant on all side from the presumed probings of predators and parasites. The pupae is enclosed in a loose harness of several silken loops, like a hammock, and from this several suspension lines lead to the sides of the cage. The pupa is pale orange with some bold black spots and wriggles vigorously when touched. Mysteriously, the shed skin of the last larval instar is always outside the cage.

We have not seen the adult moth actually emerge, but in those that have hatched for us in the lab the moth magically appears outside the apparently intact cage leaving the empty pupal shell still swinging in its hammock inside. But close examination shows that the overlapping setae at the two pointed ends of the cage are not silked together like the rest of the cage. This means that a creature can push them apart from inside, and they close behind it as it emerges. This is exactly the same mechanism used in the one-way entrances to baited feral pig traps we often see in national parks these days, or those used to trap wild cattle at water points. In the case of our insect Houdini, the pupa hangs in position with one of these exit points immediately in front of its head, so when the moth emerges it simply pushes straight ahead and out the aperture which closes behind. Harry would have been proud of it! There's a similar one-way exit at the other end of the cage, opposite the tail end of the pupa, and this presumably explains its version of Malcolm's missing pants trick. As the suspended larva pupates, it (presumably) sloughs its skin from the head end down along its body until finally it is pushed out the adjacent secret exit by the wriggling tail of the pupa; the tail has a couple of sharp points to aid this process. Many other lepidopteran pupae fling or push the larval skin away with their flexible tail. In this way the Houdini moth gets its skin OUT through an exit that enemies cannot then get IN through.

So what about the larva which builds this amazing structure? They haven't been found and bred through, but this group of arctiids would be expected to feed on lichens and algae on dead wood surfaces. Several times I have found candidate arctiid larvae (Fig. 6) in situations where the pupae cages are found. Unfortunately they've been collected by pyrethrum spraying so we haven't been able to make them perform. They have dense, long, very stiff setae on their dorsum (Fig. 7), and these setae conform exactly in size and sculpture to the setae from which the "cages" are constructed. I think it is reasonable assume that these are the larvae that make the cages. The real riddle of this story lies in trying to conceive how the larva builds the cage. Now, dear reader, I want you to adopt the Zen method of speculating on this problem...I want you to "become as one" with this humble caterpillar. Here are your tools. You've got a long flexible body with a bunch of upright setae with their pointed bases embedded in your back. You've got a head at the front end with some jaws that can grip things, and on your lower lip are some silk glands that can squirt out threads of sticky silk. Beneath your chest you have three pairs of simple hook-like legs that can also grip things. Along your belly you have a row of pairs of prolegs than can grip the substrate very strongly. Your body is strong and flexible and you can bend your head end around to your back or your tail. Here is your mission (should you choose to accept it). You can do the bits in any order you like. Find a flat surface in a quiet spot and lie on your belly holding tight with you prolegs. Get setae off your back and stand them up individually on their pointed ends in a curving row along each side of you. They are not as high as you need, so attach other setae with silk to their upper ends to make them longer. Attach another lot of setae in horizontal rows to the upright setae. You will also need to double these to make them long enough to project beyond the last vertical setae at each end. Make sure all the setae are nicely spaced and parallel. Pull the tops of the two rows of vertical setae together above your back so they meet. Put a little silken hitch around all the setal junctions so the final structure is rigid. Make sure you don't put these hitches on the converging ends of the horizontal setae, just in case you want an escape route later. Then spin a few loops of silk around yourself to make a sort of harness and pull yourself up into the air by some threads of silk running from the harness to the cage wall. Make sure you end up hanging right in the middle of cage otherwise some nasty critter outside might be able to reach you. By the way, you only get one chance in you life to do this job, so make sure you get it right the first time. Good luck with your mission.

Figure 6. Presumed larva of *Cyana meyricki.*

Figure 7. Detail of setae of presumed larva.

It will be revealing to eventually find out just what physical tricks and contortions the caterpillar of this species goes through to build this neat cocoon structure and it would be an intriguing scenario for modern nature microphotography to capture. Densey Clyne, we need you! Many moth larvae, and especially arctiids, are known to include their defensive larval setae in the silken cocoon when they pupate, but normally the bulk of the cocoon structure is spun silk with the setae as an afterthought. But in *Cyana meyricki* the silken component has been reduced to mere hitches holding the setal structure together. An Australian arctiid species that is well advanced along the line of silk reduction is *Antesia ombrophanes* Meyrick. Photographs of its pupa in the Coupar's *Flying Colours* book show a semi-transparent inner cocoon coated with an irregular outer layer of crossed setae. Interestingly, there are some excellent pictures taken at Bangalow, NSW, by an anonymous photographer under this species name, on a picture blog at http://www.flickr.com/photos/tapperboy/114335759/. However they are, in fact, the best examples I have seen of our own Houdini moth, *C. meyricki.* Some have pre-pupal larvae still working inside the part-formed cages… so an opportunity to solve the riddle was lost.

Thanks to Geoff Thompson and Jeff Wright for taking the photographs.

Notes and Exhibits
Presentation #5 by Desley Tree
(Department of Primary Industries and Fisheries):

Diet and feeding method of *Mecynothrips hardyi*, a spore feeding thrips (Thysanoptera)

I have been studying the diet and feeding method of *Mecynothrips hardyi*, a spore-feeding thrips for my minor research project in Masters of Entomology. This study was conducted over the first semester this year - 2008.

Thrips (Thysanoptera) are an order of insects more commonly known as plant pests, however approx 10% of the known species feed on whole fungal spores. These species, including *Mecynothrips hardyi*, all belong to the sub-family Idolothripinae. *Mecynothrips* are one of the largest thrips known, they measure approx 8-10mm in length and also exhibit a good example of sexual polymorphism among adults (Fig 1).

The order of Thysanoptera contains 800 genera world-wide and these are divided into two sub-orders - Terebrantia and Tubulifera. Terebrantia contains eight families, the largest being Thripidae, which contains nearly all of the pest species. Tubulifera has only one family, Phlaeothripidae, which is then divided in two subfamilies, Phlaeothripinae and Idolothripinae. *Mecynothrips* is found in the subfamily of Idolothripinae and all the 82 genera (~600 species) are known to feed only on whole fungal spores.

At the beginning of my project I proposed three main questions:
Where does *Mecynothrips hardyi* live?
What do they mainly feed on?
How has its gut adapted to this diet?

Firstly - where does *Mecynothrips hardyi* live?

Currently to date *Mecynothrips hardyi* has only been collected on hanging dead leaves and branches of *Acacia harpophylla* – or more commonly known as brigalow (Fig. 2a), but are they **only** found on dead branches? I located three brigalow trees located near Marburg, west of Brisbane, Queensland, and sampled all the hanging dead leaves / branches and live branches I could reach, as well as sieved approximately 2 sqm of leaf litter from under each of the trees. All life stages of *Mecynothrips hardyi* were only found on the hanging dead leaves / branches.

Figure 1. ***Mecynothrips hardyi*** **– sexual polymorphism, left – adult female, middle – small male, right – big male with enlarged fore femora and tubercules on the inner margins.**

Some interesting observations of the *Mecynothrips*' biology made during the study were -

- Females lay eggs in clusters and glue these to the surface of the dead brigalow leaves. Adult females were seen guarding the eggs from time to time, and sometimes straddling these clusters as a hen would sit on a clutch of eggs. On one occasion an adult female was seen with a cluster of eggs, presumably guarding these, however on looking closer, the angle and movement of her head indicated that she was actually feeding on the eggs (Fig. 2b). Once she moved away from the eggs, they collapsed and never hatched. This has never been seen before in Idolothripinae and maybe this is why adult females guard the eggs – against other arthropods but maybe also against members of their own species.

- Once the eggs hatch the 1st and 2nd instar larvae feed on fungal bodies that grow on the surface of the dead brigalow leaves (Fig. 2c). Following these are three pupal stages that don't feed.
- Adult thrips were often seen cruising on the dead petioles and branches of the brigalow tree, presumably foraging for fungal spores (Fig. 2d).
- *Mecynothrips* adults and larvae were often seen sheltering under silken webbing structures that were a distinctive shape with concave edges (Fig. 2e). Whether they produce this silk is still yet to be determined, however it is possible as there are many species of thrips found in central Australia on *Acacia* trees that produce silk to glue the phyllodes together and they then feed and breed within that space. Also, I have seen another large spore feeding thrips, *Idolothrips spectrum*, sheltering under silken webbing of the same shape on dead leaves of *Eucalyptus* trees; therefore it is possible that they do produce the silk.

Secondly - what do they mainly feed on?

The guts of the 32 adult thrips and 45 larvae collected from the three brigalow trees were dissected. Many large brown two-celled spores were found in the midgut, some partially digested and some still whole (Fig. 2f). There were no spores seen in the hindgut (Fig. 3a).

To identify the spores in the midgut I needed to locate the fungal bodies that produced these spores on the brigalows' dead leaves or branches. I searched many fungal bodies on the dead leaves and stems and could not find any fungal bodies with spores that looked like the ones in the midgut. I incubated several dead leaves and stems in a petri dish along with a small piece of moistened filter paper and sealed this with parafilm. Within a few days the fungal bodies were producing masses of spores. However, are these fungal bodies producing the same spores that the thrips were feeding on? Spores from the midgut and the fungal bodies were measured in length and width. These were statistically analyised and showed no significant difference in the spore width or length. Once I knew which fungal bodies the thrips were feeding on, I could identify them by the morphology of the mature and immature spores as well as the morphology of the fungal body wall (Fig.3b). With the help of Dr Roger Shivas from the Department of Primary Industries and Fisheries (DPI&F) Plant Pathology Herbarium, these spores were identified as an undescribed species from the genus *Diplodia*.

All intact spores from the thrips' midguts were counted. Three different spores types were found, the large *Diplodia* sp. A, and much smaller *Diplodia* sp. B and *Pestalotiopsis* sp. Adults fed mostly on *Diplodia* sp. A, and the larvae fed mostly on *Diplodia* sp. A and *Pestalotiopsis* sp. (*Diplodia* sp. A is currently being described by Roger Shivas and myself).

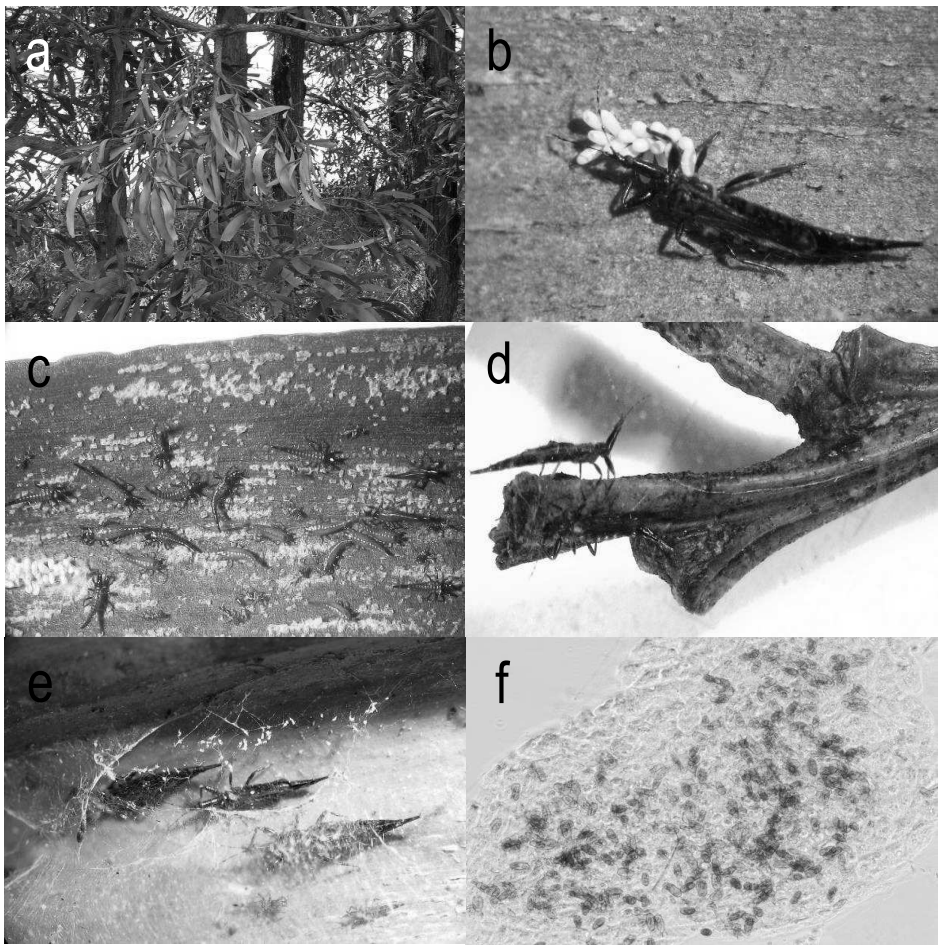


Figure 2. Images of *Mecynothrips hardyi*. **(a)** Hanging dead branches of brigalow near Marburg, typical habitiat of *M. hardyi*. **(b)** Egg cluster two days old on a dead brigalow leaf with an adult *M. hardyi,* possibly feeding on the eggs. **(c)** First and second instar larvae of *M. hardyi* with old egg cases, on a dead brigalow leaf. **(d)** Adult *M. hardyi* foraging on young stems of brigalow. **(e)** *M. hardyi* adults and larvae sheltering under silken webbing on dead brigalow leaf. **(f)** Large brown two-celled spores in the midgut of a *M. hardyi* adult.

Thirdly – how has their gut adapted for this diet?

Of the approximately 6,000 known thrips species 10% of these feed on whole fungal spores and have broad maxillary stylets which are 5-10*um* in width, presumably to accommodate the ingestion of whole spores. The other 90% of thrips species have much thinner maxillary stylets, 1-3*um,* as these species feed on the contents of plant cells and fungal hyphae.

Taking a closer look at the adult *Mecynothrips* mouthcone under the scanning electron microscope (SEM) I observed the broad maxillary stylets with 'tongue and groove' channeling down their sides and the interlocking fingers on the ends ready to bring the two stylets together and from a very efficient sucking tube. These measured at least 10*um* under the SEM (Fig. 3c).

To determine if these stylets were wide enough to ingest the large whole *Diplodia* sp. A spores, I measured the width of several slide mounted specimens adult and larvae *Mecynothrips* and compared these with the width of the *Diplodia* sp. A spores. The average width of the adult stylets were 14*um*, larvae were 12*um* and the average width of the *Diplodia* sp. A spores were 11*um.* Therefore the maxillary stylets of both adult and larvae *Mecynothrips* are width enough to ingest the *Diplodia* sp. A whole.

Secondly, in slide mounted specimens of *Mecynothrips,* a sclerotised foregut is seen in the mesothorax (Fig. 3d). This is quite visible and distinctive and looks like a short tube with longitudinal sculpture. It was only found in the 3rd pupal stage and adults, not in the larvae or 1st or 2nd pupal stages. Also only five of the 82 Idolothripinae genera are known to have this sclerotised foregut; *Dinothrips, Elaphrothrips, Tiarothrips, Ophthalmothrips* and *Mecynothrips*.

Together with the help of Dr Bronwen Cribb from UQ, we examined the sclerotised foregut under the SEM and discovered the tube was surrounded by many rings of muscular tissue (Fig. 3e) and inside this tube there were lines of interlocking plates covered with serrated ridges (Fig. 3f), presumably for abrasion of the spores to assist in their digestion.

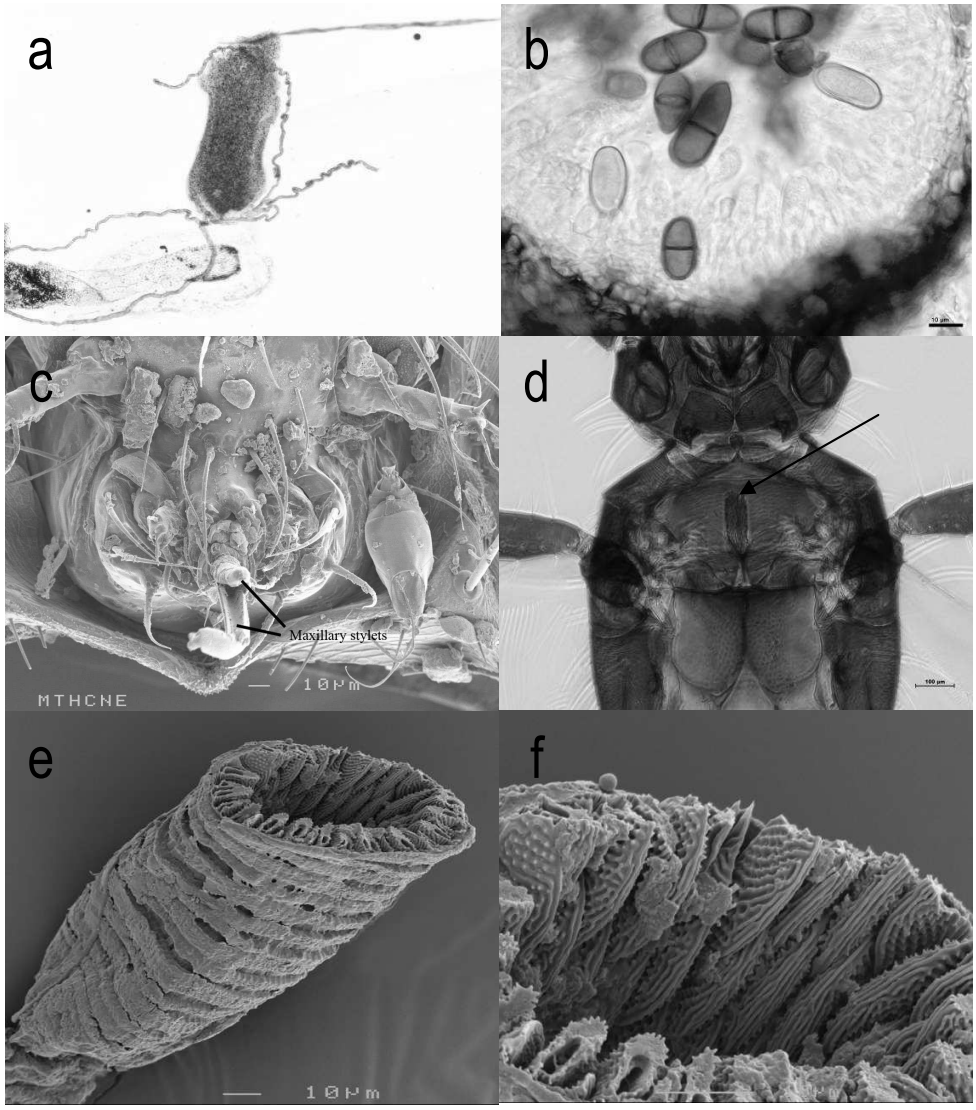


Figure 3. Images of *Mecynothrips hardyi.* **(a)** Gut dissection showing many whole fungal spores in midgut of adult *M. hardyi* giving gut contents a brown appearance. No spores are visible in the hindgut. **(b)** Spores inside the fungal body of *Diplodia* sp. A on incubated dead petioles of brigalow. **(c)** SEM image of adult *M. hardyi* mouthcone, showing stylets (labelled). **(d)** Sclerotised foregut (arrowed) seen through the mesothorax of slide mounted adult *M. hardyi*. **(e)** SEM image of dissected foregut showing surrounding rings of muscular tissue. **(f)** SEM image of inside of foregut showing interlocking plates covered with serrated ridges. (D.J. Tree).

Therefore I have answered my initial three questions but in doing so, this has raised more questions to be addressed.

- Is *Mecynothrips hardyi* host specific?
- Sampling during more seasons should be conducted.
- Do thrips produce the silk webbing?
- How do the larvae digest the thick-walled spores without the sclerotised foregut that the adults have?
- Does *Diplodia* cause dieback in brigalow? (As I was researching the known *Diplodia* spp. from *Acacia* in Australia, one word kept coming up and that was 'dieback'. *Diplodia* is known as the causal fungal agent of dieback in pine, rubber, citrus and peach trees, and as I remembered back to when I was collecting *Meycnothrips* from the three brigalow trees, I remembered that the hanging dead branches were small sections of otherwise healthy branches peppered over the trees, matching the description in the references. Whether this is a case of dieback happening of the brigalow trees is still yet to be determined but it is quite possible this is the case.

Many thanks to: Sandy Pollock (Queensland Herbarium) for helping to locate and identification of the brigalow trees; Roger Shivas (DPI&F Plant Pathology Herbarium) for helping identify the fungal spores; Bronwen Cribb (UQ) for helping to prepare specimens for SEM; Laurence Mound (CSIRO, ACT) for his helpful comments on this project and Gimme Walter (UQ) my supervisor for his guidance during my project.

Vote of Thanks:
Noel Starick thanked all presenters for a most interesting diversity of subject matter.

Chairman's Closing Statement:
The next meeting will be the AGM held at this venue on March 9th, 2009 at midday. He invited Members and Guests to our end of year BBQ and drinks at the recreation area on the east side of this building. There would be a fee of $5/person.

Notice of Next Meeting

Entomological Society of Queensland

Monday 9 March, 2009 12pm

Annual General Meeting & Presidential Address by Dr Mike Furlong (UQ)

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

News from the USDA-ARS Australian Biological Control Laboratory

Jeff Makinson and **Bradley Brown** began host range testing of the gall forming scale insect *Sphaerococcus ferrugineus*, a potential biological control agent for the broad-leaved paperbark tree, *Melaleuca quinquenervia*. This insect has been collected throughout the native range of *M. quinquenervia* in Australia, and experimental results thus far indicate that it is highly specific. Jeff is also working with **Tony Wright** on a stem-boring moth collected from Hong Kong which attacks the climbing fern, *Lygodium microphyllum*. This insect is proving very difficult to rear and further efforts will concentrate on the use of artificial diets. **Ryan Zonneveld** is maintaining colonies of stem-boring *Bagous* weevils from Australia, China and Thailand which are being evaluated as biocontrol agents of the submerged aquatic weed, *Hydrilla verticillata*.

News Bulletin contributions from Entsoc Members
We would love to receive your news, field trip reports, sightings of strange and wonderful beasts, Entomological Notes, Bug of the Month, gossip, concerns, questions and suggestions pertaining to the world of entomology. Please send contributions to the News Bulletin editor or your nearest Entsoc office bearer.
Don't delay, next issue out soon! Thank you, Anna

Nominations for 2009 Office Bearers of the Entomological Society of Queensland

Members are invited to use the following form to nominate office bearers for the Entomological Society of Queensland Inc. for 2009.

Nominations should be sent via email, fax or post and be referred to the:

Secretary, Entomological Society of Queensland

PO Box 537, Indooroopilly QLD 4068

Please return forms by the end of January 2009.

A list of nominations received will be circulated in Issue 10 of the News Bulletin, and an election held at the Annual General Meeting in March 2009. In the absence of a nomination for any particular office, the president may receive nominations at the Annual General Meeting.

Positions to be filled are as follows:

- Senior Vice President
- Honorary Secretary
- Honorary Treasurer
- News Bulletin Editor
- Councillors (3 positions)

The Entomological Society of Queensland functions effectively because members play an active part in the Society. All members are encouraged to nominate for positions on the Council of the Society. If you want to know more about any of the Council positions, please contact one of the existing Council members listed on the back cover of the News Bulletin.

Office Bearer Nomination Form 2009

I nominate (name)

……..……

For the position of

- Senior Vice President
- Honorary Secretary
- Honorary Treasurer
- News Bulletin Editor
- Councillor

on the Council of the Entomological Society of Queensland Inc.

Nominated by

……..……

Seconded by

……..……

I accept the nomination

……..……
(nominee signature)

Entomological Society of Queensland 2009
$250 Student Award

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

Honours, Diploma and 4th year Degree students who received their qualification from any Queensland tertiary education institution in 2008 or 2009 may submit their entomology based thesis or report for consideration.

Entrants need not be Society members.

These reports can be directed to the Society's Senior Vice President at the address listed on the entry form. However, please note that a hard copy of your thesis/report does not need to be submitted, and the submission of a PDF version is encouraged. This should be emailed together with a signed copy of the completed entry form to Christine Lambkin at christine.lambkin@qm.qld.gov.au

Closing date for submissions is Friday 17th April 2009.

Student Award Sponsors:

Tropical Fruit Fly Research Group, Griffith University

Entomological Society of Queensland
2009 Student Award Entry Form

Name

_____

Title of thesis or report

_____

_____

_____

Degree

_____

Supervisor

_____

Date of Examiners report or grading

_____

Return address for thesis/report (if applicable)

_____

_____

Signature_____ Date_____

Send in thesis/report with a signed and completed entry form to:
Christine Lambkin
Senior Vice President of the Entomological Society of Queensland
Queensland Museum
PO Box 3300,
South Brisbane, QLD 4101
Fax: 07 38461226

DIARY DATES 2009

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

March 9th	Dr Mike Furlong (UQ)	AGM & Presidential Address
April 14th		
May 11th		
June 9th		
August 10th		
September 14th		
October 12th		
November 9th		
December 14th		

IMPORTANT NOTICE

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

Sustaining associate of the News Bulletin:

TROPICAL FRUIT FLY RESEARCH GROUP, GRIFFITH UNIVERSITY

SOCIETY SUBSCRIPTION RATES

GENERAL:	Person who has full membership privileges	**$30pa**
JOINT:	Residents in the same household who share a copy of the *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.
See subscription form on opposite page for details.

THE *AUSTRALIAN ENTOMOLOGIST* SUBCRIPTION RATES

AUSTRALIA:	Individuals	**A$25pa**
	Institutions	**A$30pa**
ELSEWHERE:	Individuals	**A$35pa**
	Institutions	**A$40pa**

Subscriptions should be sent to the Business Manager,
The Australian Entomologist PO Box 537, Indooroopilly QLD 4068.

Society's web page: www.esq.org.au
Society's email address: esq@uqconnect.net

NOTICE OF NEXT MEETING

The next meeting of the Society will be held at **12:00 pm** on **Monday**, **9th March 2009** in the **Large Conference Room**, **CSIRO Long Pocket Laboratories**, 120 Meiers Rd Indooroopilly. The main business will be the **Annual General Meeting & Presidential Address by Dr Mike Furlong.**

VISITORS ARE WELCOME
(Please sign in at CSIRO reception before attending the meeting)

HONORARY LIFE MEMBERS OF THE SOCIETY

R.A.I. Drew D.L. Hancock M.J. Harslett

D.S. Kettle D.P.A. Sands R.P. Kleinschmidt