Tarsus

May 2009

*Issue No. 586*

CIRCULAR OF THE ENTOMOLOGICAL SOCIETY OF NEW SOUTH WALES Inc

# Next Meeting of the Entomological Society of NSW Inc

**Where**: Meeting Room 2, Ermington Community Centre, River Road, Ermington
**When**: 7.30 pm on Wednesday, 6th May 2009

**Speaker:** Deborah Kent

## BUGS IN BACKYARDS AND IN STREETSCAPES

*Deborah has a PhD from the University of Sydney in Forest Entomology and has worked with Forests NSW (now NSWDPI) in its various incarnations since 1987. She is currently working on a federally funded project on urban pest surveillance.*

Post-quarantine border surveillance of urban areas is important for the rapid detection of incursions of Emergency Plant Pests. Sydney is the major entry point for most passengers and freight entering Australia. Given the high flow of passengers and freight through Sydney, increased surveillance is important in the Sydney urban area.

In recent years two "new" pests have been discovered in the Sydney urban area. The first was the exotic Sycamore Lace Bug, *Corythucha ciliata*, discovered in the Sydney CBD in late 2006 and now widespread throughout the Sydney Basin. This pest is a native of North America and is also found in Europe, Japan and South America. The main host in Australia is the popular London Plane Tree, a hybrid between American and Oriental *Platanus* spp. This host is an important streetscape tree in urban environments and there are extensive plantings across Sydney and in other urban and rural centres in NSW. Surveys in NSW in 2008 found that the Sycamore Lace Bug was as far south as Gundagai and west to Orange. In 2009 its distribution in NSW was extended north to Newcastle.

The second "new" pest discovered was causing significant damage to eggplants in a backyard of Sydney. This pest turned out to be a native species of psyllid belonging to the genus *Acizzia*. This is the first record of a pest psyllid on eggplant, and the first record of this genus from the Solanaceae. Surveys in 2008 found it in a commercial eggplant crop in the Sydney Basin as well as on the exotic weed species *Solanum mauritianum* (wild tobacco bush). Subsequent surveys in late 2008 and early 2009 have extended it beyond the Sydney Basin as far north as Coffs Harbour.


*TARSUS* is prepared by for ESNSW by Graeme Smith Ph: 02 9981 3749 Email: le_gbsmith@optusnet.com.au

# Synopsis of March 2009 Meeting Talk

## Invasive Ants

### Why bother? - A tale of public health and environmental disaster

Garry Webb
General Manager (Environmental Health and Pest Control)
Sumitomo Chemical

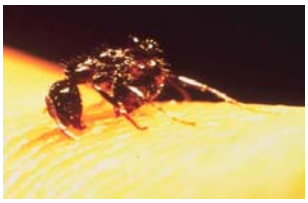
According to the Global Invasive Species Database[1], five of the top 100 invasive organisms are ants – yellow crazy ant, argentine ant, African big-headed ant, red imported fire ant and little fire ant – all of which now occur in Australia and associated islands. The origins of some species are a little unclear but almost without doubt they have been imported in cargo materials. Many were unwittingly transported around the Pacific during the 2nd World War by American, Japanese and Australian forces in machinery and equipment.

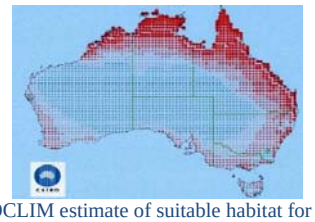
| Ants | Origin | ANZ |
|---|---|---|
| 6. Yellow Crazy Ant (*Anoplolepis gracilipes*) | Africa or Asia | Xmas Island, Arnhem Land, Darwin, Brisbane, Cairns |
| 48. Argentine Ant (*Linepithema humile*) | S. America | Temperate Austr., NZ |
| 68. African bigheaded Ant (Coastal Brown Ant) (*Pheidole megacephala*) | S. Africa | Australia-wide, NZ |
| 86. Red Imported Fire Ant (*Solenopsis invicta*) | S. America | Brisbane, Napier (NZ) |
| 100. Little Fire Ant (*Wasmannia auropunctata*) | S. America | Cairns |

### Red Imported Fire Ant

The most dramatic and publicly recognizable introduction was the Red Imported Fire Ant (RIFA), *Solenopsis invicta*, first detected in Brisbane in 2001. By that stage it had spread to a large area of urban and semi-rural Brisbane with an area of interest (treatment and surveillance) of ca. 75,000ha. The public expenditure on eradication is now approximately $200M co-funded by State and Federal governments. To this day there is a still a significant effort in place to eradicate this tramp species, primarily using insect growth regulators to interrupt colony reproduction. RIFA is considered to be of both medical and environmental significance and has the potential to spread to a large area of Australia, particularly along the eastern and northern coasts.

Red Imported Fire Ant

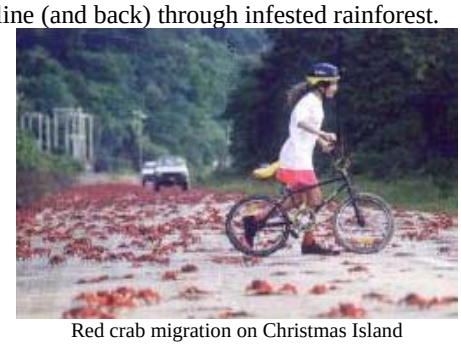




BIOCLIM estimate of suitable habitat for RIFA
Photo courtesy of CSIRO and Queensland Dept Primary Industries

### Yellow Crazy Ant

The other species of tramp ant that has received a great deal of attention in recent times is the yellow crazy ant (*Anoplolepis gracilipes*) largely due to its dramatic impact on the red crab (***Gecarcoidea natalis*****)** population on Christmas Island. YCA is directly responsible for the deaths of millions of red crabs each year as they migrate from rainforest floor to coastline (and back) through infested rainforest.



Red crab migration on Christmas Island

Yellow Crazy Ant (*Anoplolepis gracilipes*)

YCA also take a significant toll of other inhabitants of the island.

RIFA and YCA are the two most dramatic and well known "invasions" but they are not the only ones.


## Electric Ant

Recently, Little Fire Ant or Electric Ant (*Wasmannia auropunctata*) has been discovered in Cairns and there is a now a concerted effort to eradicate it before it spreads. LFA is widespread through SE Asia and the Pacific and wherever it occurs it is a significant medical and environmental hazard. Like RIFA it has a potent sting that can be quite painful to humans and pest and is capable of widespread decimation of native animals and insects.

LFA is a tiny species which tends to go un-noticed until it has built up into large enough numbers to cause significant discomfort in homes and yards and for this reason is hard to detect in natural environments.

Map of Lord Howe Island showing the settlement and area encompassing the range of ABHA on the island

## African Big-Headed Ant

Another forgotten invasive tramp ant is the African bigheaded Ant (*Pheidole megacephala*) otherwise known as the coastal brown ant. It is common throughout Australia and any of us don't even realize we have it in our yards. They tend to be dominant, slowly expelling other species. They do not have a sting of significance to humans. It is believed they have been present in Australia for at least 100 years. There is also a rich local *Pheidole* fauna and many native species are often mistaken for ABHA. ABHA tends to be more of a significant problem in conservation areas and there have been attempts to eradicate them where the threat to local fauna is considered high[2,3]. On Lord Howe Island the problem is a little different. The island community recycles as much refuse as possible for compost to avoid creating large waste dumps or having to export waste back to the mainland. Unfortunately the result is that ABHA has been redistributed around the island with the compost. There are concerns that the ants are having an impact on native fauna including the Lord Howe Island land snail……Its decline has been attributed to the ship rat and to some introduced birds but it is also likely that the spread of ABHA has also had an impact.

## Argentine Ant

The last species in the top 100 invasive species is the long forgotten Argentine Ant (*Linepithema humile)* once the target of a concerted eradication program in NSW and Victoria from the 1950s until the mid 1980s [4]. In many parts of the world they are a significant pest in agricultural and urban environments but do not now appear to be such a threat in Australia.

All of these species are the subject of significant development work to determine suitable bait treatments to achieve eradication or at least some form of control.

*Garry Webb*

## References


1. http://www.issg.org/database/species/search.asp?st=100ss&fr=1&str=&lang=EN

   The Global Invasive Species Database is managed by the Invasive Species Specialist Group (ISSG) of the IUCN Species Survival Commission. It was developed as part of the global initiative on invasive species led by the Global Invasive Species Programme (GISP) and is supported through partnerships with the National Biological Information Infrastructure, Manaaki Whenua-Landcare Research and University of Auckland

2. Hoffmann, BD, O'Connor S. 2004. Eradication of two exotic ants from Kakadu National Park. *Ecological Management and Restoration*. **5(2)**: 98-105.
3. Hoffmann, BD, Andersen, AN, Hill GJE. 1999. Impact of an introduced ant on native rain forest invertebrates: *Pheidole megacephala* in monsoonal Australia. *Oecologia*. **120(4)**: 595-604.

4. http://www.agric.nsw.gov.au/Hort/ascu/insects/argant.htm


This photo of a huntsman spider making a meal of a grasshopper was sent to me by Warwick Madden (Further Research & Consulting). He took the photo in March at his home in Thornleigh, NSW.

# Society web site

www.entsocnsw.org.au


As you can see, apart from updating the Future Events table and adding new issues of Tarsus every two months, the site hasn't changed a lot. This could be because I'm getting lazy or it could be because nobody has submitted any suggestions or content. Please don't leave it all to me- What can YOU DO to keep this site interesting? Even just a new photo for the home page would keep it fresh but make sure you send one that you don't mind losing control over. We don't have a system to protect your copyright.

Total hits on the site are now over 10,000 since inception or about 800 per month. The Tarsus page has received about 150 hits since the last issue was posted. There have been 677 hits in total on the General & Applied Entomology page, 211 of which we people trying to access the latest issue only to be told this was only available to members.

For any problems (e.g. lost passwords), submission of photos for publication or suggestions for improvement get in contact with Graeme Smith. (0421 617 377) or le_gbsmith@optusnet.com.au

# Honorary Editor's Report

**March 2009**

Volume 37 of ***General and Applied Entomology*** was published in mid-2008 in the regular light blue cover format. It contained seven papers and three book reviews. Topics covered were a report on the prevalence of sycamore lace bug, two papers on mosquitoes inhabiting areas of metropolitan Sydney, a description of a new cicadellid species from Western Australia, a report on experimental work related to release of sterile Queensland fruit fly, a paper describing field trial results of a control strategy for small hive beetle and a report linking Pentatomidae to grain blemish in rice crops. The cover featured a line drawing of *Subtrinemura anemone* (a nicoletiid silverfish) by Graeme Smith.

The quality of production was excellent with eleven colour pages featuring. Our page charges to print in colour remain lower than those of comparable journals. We have published on time (30th June) for the past eight years and will publish on time again in 2009. My thanks go to the Editorial Board for their support and timely turnaround of manuscripts and to the anonymous referees who have been so generous with their time. All manuscripts submitted are sent to at least one technical referee and to one member of the Editorial Board. The Editorial Board for 2008 comprised Dr. Murray Fletcher, Dr. Grant Herron, Dr. Debbie Rae, Dr. Mark Stevens and Dr. Christine Stone. The Editorial Board for 2009 is unchanged. The Editor did the desktop publishing at no cost to the Society and the University of Western Sydney printed the journal. The journal is abstracted by **CAB International** and **Zoological Record** (formerly BIOSIS) so potentially is can be reached worldwide. In 2008, authors were provided with a pdf of their paper *in lieu* of reprints. As well, back issues of volumes 31 to 36 of ***General and Applied Entomology*** were placed on the Society's webpage as low resolution pdfs. Society members had web access to the most recent issue.

The cut-off for submission of manuscripts for Volume 38 is 31st March. Currently there are two manuscripts accepted for publication. Authors of up to seven more papers have contacted me to indicate there intention to submit a manuscript by end of March. Volume 38 will also include a book review.

Volume 38 may be the last edition of ***General and Applied Entomology*** that I put together as Honorary Editor. If so, it has been a rewarding challenge. When I put my hand up for the role, the journal had not been published for some time. As a professional entomologist the journal was my main reason for remaining a member of the Society and without it I seriously contemplated resigning. I'm pleased that I decided to help rather than abandon the journal and the Society and hope that other members might offer to take on some of the responsibilities of Council.

Dr. Garry LEVOT
Honorary Editor
4th March 2009

# Financial Report

We clearly have no fanatical accountants in the Society because nobody except the Treasurer himself noticed that 3 lines had mysteriously vanished from the financial report published in the last Tarsus, making the totals illogical (but still correct). Below the corrected report. The books have now been internally audited.

**THE ENTOMOLOGICAL SOCIETY OF NEW SOUTH WALES INC**
STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 31 DECEMBER 2008

**GENERAL FUND**

| | | |
|---|---|---|
| INCOME | | |
| Members subscriptions received and receivable | $3,805.00 | |
| Wild Flower Garden Exhibit income | $96.00 | |
| Bank Interest | $207.09 | |
| Donations | $100.00 | $4,208.09 |
| PAYMENTS | | |
| Web Site development | $720.00 | |
| Insurance – Public liability | $771.01 | |
| Meeting Room hire | $219.45 | |
| Ent. Soc. of Australia affiliation fee | $57.75 | |
| Incorporation Statement lodgement fee | $44.00 | |
| Supper expenses | $173.72 | |
| Speakers' Gifts | $50.97 | |
| Student Presentation Prize | $200.00 | |
| Student Presentation Lunch | $270.00 | |
| Student Presentation Certificates | $11.98 | |
| Wildflower Garden Exhibit Expenses | $4.45 | $2,523.33 |
| | **Result for 2008** | **$1,684.76** |

**PUBLICATION FUND**

| | | |
|---|---|---|
| INCOME | | |
| Journal income received and receivable | | $2,690.46 |
| Less: Cost of Journal | | |
| Opening stock at Committee' valuation | $5,320.00 | |
| Journal postage and stationary | $210.10 | |
| Printing J. Vol. 37 | $1,949.24 | $7,479.34 |
| Plus: | | |
| Closing stock at Committee's valuation | $4,320.00 | |
| Company Associate Members | $120.00 | |
| Bank Interest | $5.48 | $4,445.48 |
| | **Result for 2008** | **($343.40)** |

**BALANCE SHEET AS AT 31 DECEMBER 2008**

| | | | |
|---|---|---|---|
| ACCUMLATED FUNDS | | | |
| Balance to 31 December 2007 | | | $17,901.33 |
| Results for the year | General Fund | $1,684.76 | |
| | Publication Fund | ($343.40) | $1,341.36 |
| | | | **$19,242.69** |
| **REPRESENTED BY:** | | | |
| Cash at Bank | General Fund | $5,441.95 | |
| | Publication Fund | $2,610.74 | |
| | Term Deposit | $7,000.00 | $15,052.69 |
| Cash on hand | | | $200.00 |
| Stock of Journals at Committee's valuation | | | $4,320.00 |
| Debtors | Members subscription arrears | $625.00 | |
| | Journal payment arrears | $800.00 | $1,425.00 |
| | | | **$20,997.69** |
| Less: | | | |
| CURRENT LIABILITIES | | | |
| Subscriptions in advance | | $1,665.00 | |
| Advance payments for J. Vol. 38 | | $90.00 | $1,755.00 |
| | | | **$19,242.69** |

***Ted Taylor***

# Insect of the Month

While looking through the collections of interstate newsletters on display at the last meeting I found my attention grabbed by an article on an arctiid moth and thought other members might be interested. I requested permission of the author (also a member of our society) as well as Anna Marcora (editor of the Entomological Society of Queensland News Bulletin) to reprint the article in Tarsus. Many thanks for their quick, positive response and supply of a digital version of the text and photos which makes my job a lot easier. - *Graeme Smith- Circular Editor*

This article was first published in The Entomological Society of Queensland News Bulletin Vol. 36 (9), December 2008.

## THE MYSTERY OF THE ARCTIID MOTH
### *Cyana meyricki* Rothschild, AN INSECT HOUDINI

by Geoff Monteith, Queensland Museum

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.

Fig.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.

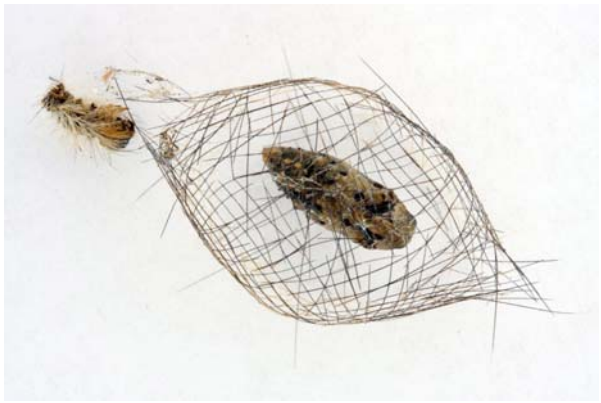


Fig. 2. Pupal cage of *Cyana meyricki*, dorsal view. Head of pupa is to the right. Last larval skin is outside the cage at left.

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

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

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. High power 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.

Fig. 4. Pupal cage, end view.

Fig. 5. Detail of cross bars of pupal cage.

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 the cage otherwise some nasty critter outside might be able to reach you. Now, hanging in your hammock, it might seem a good time to relax, but you have one last job. You have to shed your skin and become a pupa. Your skin is like a full-length jump suit with a zip-opening from the top of your head down your back. All your manipulative tools (head, jaws, silk glands, legs and prolegs) are part of that jump suit. They all cease to operate as soon as the zip starts to open. Inside, your are in the ultimate straight-jacket as a pupa, but you still have to wriggle your jump suit down your body, through the loops of silk which support you in mid air. When you finally manage to kick your pants off at the tail end you then have to push them out through the one-way opening in the cage wall. Only then can you relax. By the way, you only get one chance in you life to do this job, so make sure you get it all right the first time. Good luck with your mission.

Fig. 6. Presumed larva of *Cyana meyricki*.

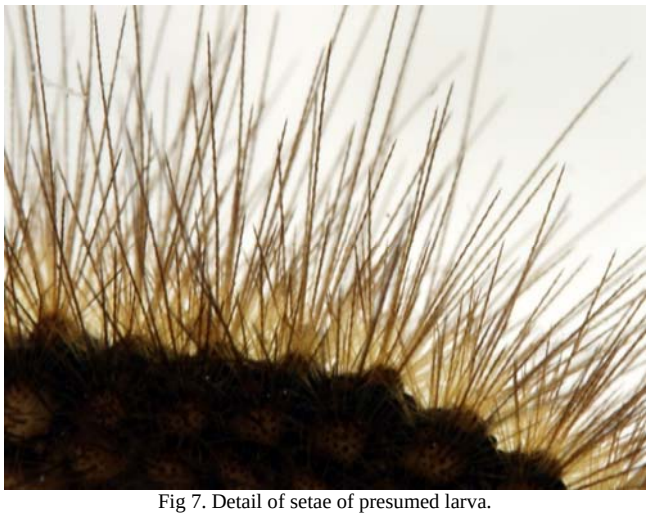


Fig 7. Detail of setae of presumed larva.

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, Queensland Museum, for taking the photographs

# Show & Tell March meeting

Barbara May showed a magazine (Education Feb 16, 2009) with an article about a lady, Gwen Morris who provided silkworm larvae to schools

Ted Taylor produced an article he found in the previous day's Telegraph about a lady who rears insects and sells them - actually Skye Blackburn one of our newest members. Ted also showed "The greatest stamps of all time", three of which depicted insects - cotton harlequin bug, red lacewing (actually a butterfly)

Dinah Hales bought along a predatory mosquito larva *Toxorhynchites*

Eliza showed a box of spiny leaf insects raised from stock provided by Howard Greening). They had been raised on eucalypt leaves

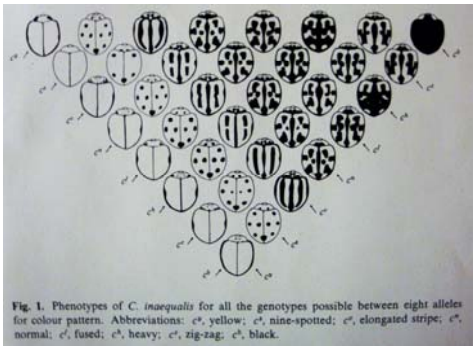


Fig. 1. Phenotypes of *C. inaequalis* for all the genotypes possible between eight alleles for colour pattern. Abbreviations: $c^a$, yellow; $c^e$, nine-spotted; $c^g$, elongated stripe; $c^n$, normal; $c^f$, fused; $c^h$, heavy; $c^z$, zig-zag; $c^b$, black.

Dinah also brought a box of *Coelophora inequalis* showing the wide variety of genotypes

# Bi-monthly Meetings

The Society meets **BI-MONTHLY** unless otherwise advertised. General meetings with a speaker will generally be held only on the "odd numbered" months (March, May, July, September, November) while the Council will meet more frequently. Speakers tentatively scheduled for the coming general meetings are shown below.

This timing allows us to alternate meetings with the Society for Insect Studies (SFIS) which meets at the Australian Museum at 7.30 on the second Tuesday of the "even numbered" months.

## Future Events

| Date | Speaker | Title |
|---|---|---|
| 6 May, 2009<br>7.30 pm | Debbie Kent | Psyllids and lace bugs |
| 1 July, 2009<br>7.30 pm | TBA | Any volunteers or suggestions? |
| 2 Sept, 2009<br>7.30 pm | Bryce Peters | Flea control |
| 4 Nov, 2009<br>7.30 pm | TBA | Volunteers or suggestions welcome |

**Venue:**
Meeting Room 2
Ermington Community Centre
10 River Road Ermington

**Meetings start at 7:30 p.m.** (directly following the Council meeting)
Talks run for around 45 minutes, with 10 minutes for questions, followed by a light supper. Guests are most welcome.

**Getting there:**

*By Car:* From Victoria Rd turn into Spurway St (head towards Parramatta River). Turn right into Jackson St then left into River Rd. If heading north on Silverwater Rd, turn right into Victoria Rd then proceed as above. If heading south on Silverwater Rd take the Parramatta off ramp, cross Victoria Rd and proceed into River Rd. If you miss the off ramp, turn left into South St, then left into River Rd.

*By Bus:* Routes 525, 523 and L20 depart from Argyle St near Westfield shopping centre near Parramatta station. Routes 523 and L20 depart from West Ryde station. Get off at the Ermington shops. River Rd passes between the supermarket and the hotel.

**SOCIETY POSTAL ADDRESS**
C/- ENTOMOLOGY DEPARTMENT
THE AUSTRALIAN MUSEUM
6 COLLEGE STREET
SYDNEY NSW 2000

**MEMBERSHIP FEES 2009**

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| ORDINARY MEMBERS | $50 |
| COMPANY ASSOCIATES | $60 |
| STUDENT MEMBERS | $25 |
| CORPORATE MEMBERS | $50 |

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