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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, 2 July 2008

**Speaker:** Graeme Smith, Reckitt Benckiser

### Testing Consumer Pest Control Products

The development of Reckitt Benckiser's global consumer pest control product range is carried out from their labs located in Ermington, NSW. Products can vary from extremely low cost mosquito coils for India to expensive mouse traps for the US. Graeme will outline the development of a pest control product from inception to the final acid test – sale to the consumer. The process involves many phases including initial testing, small & large scale trials by external labs and universities, field trails and consumer research.

## Ku-ring-gai Festival of Wildflowers 2008

### *'How does your garden grow?'*

Our Society will again participate in the popular nature conservation oriented Festival of Wildflowers, organised by the Ku-ring-gai Municipal Council. The Festival theme this year is

“Our Environment – Our Future”

encouraging the community to adopt sustainable gardening behaviours, planting of native species and conserving local fauna. The Festival is held on the weekend **30-31<sup>st</sup> August** from 9.00 am – 4.00 pm at the Ku-ring-gai Wildflower Garden, which is accessed through the park gate at **420 Mona Vale Road, St Ives.**

The displays and activities at our Society stall will continue to promote insect admiration and knowledge. The numerous stalls by various societies offer displays of native plants and animals, spectacular floral arrangements, native plants and literature for sale, and there will be guided walks through the adjoining bush by our Society and others. The local Council also offers entertainment for children and Rotary volunteers will be selling BBQ lunch, cakes and drinks. The entry for visitors and participating organisations is free of charge.

For those members of our Society that wish to join at the stall, please phone Gith Strid-Nwulaekwe on 0418-206622 or 9888 9011 (evenings).

*A warm invitation is extended to this friendly and highly educational event set in a flowering woodland!*

<http://www.kmc.nsw.gov.au/www/html/536-festival-of-wildflowers.asp>

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NOTICE: Statements made in the Circular do not necessarily represent the views of the Entomological Society of New South Wales Inc. TARSUS is for educational purposes only. TARSUS is prepared by for ESNSW by Graeme Smith Ph: 02 9981 3749 Email: le\_gbsmith@optusnet.com.au

## May Meeting Talk

### Alpine Ants - Robert McDougall, Macquarie University



True alpine areas are places where there is an average of four or more months of snow cover per year and temperatures are too cold to allow trees to grow. Australia's alpine environments are a small and highly unique group of ecosystems that make up a little over 0.001% of the continent by area, all clustered around the highest peaks in NSW, Victoria and Tasmania. They are vastly different from the majority of other Australian environments and this, combined with their isolation from other low temperature environments, makes them home to a wide variety of unique flora and fauna.

However these environments are also uniquely vulnerable to climate change, with a large proportion of the biota present being dependent on low temperatures and regular snow cover. Climate change is also likely to negatively impact these environments as a result of lowland species moving to higher altitudes in order to avoid rising temperatures.

In 2007, as the major project of my Honours degree at Macquarie University, I carried out the first systematic study of the ant fauna of Australia's alpine (and adjacent subalpine and montane) regions. The species composition and ecology of the ant communities in these regions was almost entirely unknown, although it was generally assumed that as a family of organisms severely stressed by cold their role and numbers would be somewhat limited. However, climatic warming has the potential to change this and as ants play such an important role in many other Australian environments, they may be a significant force in alpine regions as these areas warm.

To investigate the species composition of the region I carried out pitfall trapping throughout the snow-free parts of the year at every 100m of altitudinal change along two transects. These ran from relatively benign montane woodlands at 1200m elevation to harsh windswept grassland communities at 2100m on the flank of Mount Kosciuszko. I also investigated the behaviour and foraging activities of ants in the community by laying out tuna baits and observing the species attracted and their interactions, as well as placing depots containing seeds to test if ants had a role in seed predation or dispersal in the region. I also placed a set of special lidded pitfall traps beneath deep snow cover in July to investigate whether or not ants were active within the sub-nivean space – a gap that forms between the base of a snowpack and the soil surface. After completing this field work I carried out bioclimatic modeling to estimate how climate change may alter the distribution of three key species in the area – *Myrmecia pilosula* (Myrmeciinae), *Notoncus ectamoides* (Formicinae) and an unnamed species of *Anonychomyrma* (Dolichoderinae).

As expected, the region was found to be home to a very limited number of ant species – only 19 in total, representative of 12 genera. The unnamed *Anonychomyrma* species was numerically the dominant species in the region, making up over 90% of all individual ants collected. This species was also behaviorally dominant, excluding other ant species and other insects from the baits laid out in all

situations where other species were present. However at all true alpine sites (those above the treeline), this was the only ant species present.

The ubiquity of *Anonychomyrma* was an unexpected result as this is a genus that is known to be highly competitive. Theory suggests that in stressful environments (as the study area is from the point of view of an ant) adaptations that provide stress tolerance should be favoured over those that increase an organism's competitiveness. A likely explanation for this apparent contradiction lies with the relatively sophisticated nest warming behaviour employed by *Anonychomyrma* and related genera.

Nests are warmed by using gravel, charcoal and other objects with low specific heat capacity as crude solar energy collectors. These materials are left in the sun near the nest entrance and once warm are taken inside

the nest to radiate heat. Evidence that the dominant *Anonychomyrma* species found in this area engages in such behaviour comes from the fact that individuals were seen carrying gravel grains into their nests. By this method *Anonychomyrma* is able to exploit the open nature of the alpine environment to overcome some of the challenges created by the low temperatures there.



No ants were found in subnivean pitfall traps; however an incidental observation of subnivean ant activity was made when digging under snow inadvertently penetrated a nest of *Anonychomyrma*. Within one minute, around 100 individuals were observed moving around on the newly exposed soil surface (see photo). Some were seen carrying larvae back into the nest while others continued to walk around on the surface. Some climbed to the top of erect grass blades while a few others began moving around on patches of snow crystals. This observation is taken as evidence that this species remains active in their burrows during winter at a reduced rate in order to engage in social thermoregulatory behaviour such as clustering around the queen.

Bioclimatic modelling indicated that all three species modelled will be able to extend their range to higher altitudes over coming decades as a result of climatic warming. *N. ectamoides* and *M. pilosula* will be able to move 200-300m higher to occupy the upper reaches of the sub-alpine zone while *Anonychomyrma* will be able to extend its range to the highest altitude available – the peak of Mount Kosciuszko.

One particularly significant affect that this change in distribution may have is on the plant communities of the region. Ants were found by this study to remove seeds of Snow Gums as well as plants exotic to the region. This means that ants likely have some role in dispersing seeds and this will help plants such as Snow Gums move to higher elevations as climatic conditions open these habitats up to them. Without a vector such as ants, many plants would have great difficulty colonising uphill sites due to being gravity dispersed and due to the dense nature of alpine grasslands. Ants will also likely exert a strong competitive influence on the invertebrate fauna of the alpine zone, much of which has few competitive adaptations.

## Web site

Since its inception until the May meeting, we had 1035 hits on the site. The number of hits greatly increased once I worked out how to get Google searches to find the site. I still haven't managed to re-direct our old site to the new one.

We have used the web site's general mailout facility to inform registered members that Tarsus is available on line before it is emailed out. Ultimately, I would like to use this means as the sole way of distributing Tarsus to members but will continue with the dual method until members have the chance to make up their mind what they prefer. There were 49 hits on the Tarsus page following the email so maybe half the membership used this facility to get Tarsus a bit earlier than the rest.

Dinah Hales submitted a photo of a moth, possibly *Utethesia pulchelloides* Hamps. (Arctiidae), photographed by Robert Hales at Thredbo, NSW, on 6.iii.2008. This has been posted on the photo page of the website but I have also used it as the image on the front page. If any other members have a photo they would like posted, please send them to me (I can cope with up to 4 MB file size). I will endeavour to change the front page image regularly to help give the impression that the site is dynamic, but I need photos that you are willing to have available to the public.



[www.entsocnsw.org.au](http://www.entsocnsw.org.au)



Members should have received an email with your user name and a password (that you can change to suit yourself). Logging in as a member allows you to get the latest volume of General & Applied Entomology and to find out contact details of the Council etc.

Tarsus and older volumes of G&A Entomology are available to the public

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)

## Show & Tell - May meeting

The photographer had a bad night at this meeting and the photos are not well focused. However a photo, even a blurry one says more than text so I'll run with them anyway. Hopefully, I will do a better job next time.



Howard Greening with a winged stick insect, taken on azaleas in his garden



A cup moth larva (*Doratifera vulnerans*) that stung Howard while he was collecting leaves to feed his stick insects-



Wei Liang- from Gosford Horticulture Institute bought along some almond moth  
s



Wanderer butterfly parasitised by tachinid



Barbara May provided these photos of a spider and a Tachinid fly from Currawong, NSW



Cossid pupal; case on acacia at North Rocks (Barbara May)



*Fred Swindley provided some photos from the Xmas dinner including a photo of Phil Haddlington and a plastic European wasp*



*Common crow chrysalis on oleander (Fred Swindley)*

Come along to meetings and bring books, live insects or anything else of entomological interest. There's bound to be somebody present who is interested in the topic or who can help identify the insect.

## Insect of the Month

### Stable fly, *Stomoxys calcitrans* – Garry Levot

Take a look at the mouthparts of this fly! If I tell you that both sexes suck blood and that your blood is as good as any, that proboscis takes on a whole new importance. The 'stable fly' *Stomoxys calcitrans* (Diptera: Muscidae) is a cosmopolitan pest of livestock and the people who handle them. It is about the same size as the house fly and on casual observation appears similar. However, apart from the distinctive mouthparts the abdomen is broader and marked in a more 'checker board' pattern.

Females lay eggs into spoiled feed, rotting hay and straw bedding mixed with urine and/or manure. Larvae are similar to house fly maggots but the species can be separated by the more triangular peritreme surrounding the posterior spiracles. Developmental time (egg to adult) under optimum conditions is about 13 days. Adult flies enjoy sunny outdoor conditions and rest on surfaces in areas frequented by livestock. In this respect they let the blood meal come to them. When an animal or unsuspecting stockman walks past *Stomoxys* simply jump on and bite. I recall a particular animal house trial I ran in Trangie that 'backed onto' a trial run by a colleague. The animal feed troughs had not been cleaned out in between trials and I arrived to find *Stomoxys* maggots infesting the mouldy residue of the pelleted sheep feed and numerous adult *Stomoxys* with a taste for my blood. Perspiration coming from the heavy work in the hot, humid animal shed caused my shirt to stick to my back and I was repeatedly bitten through the fabric. I resented the way the flies would wait until I had grabbed a sheep and could not take a swipe at them. Of course, the livestock are bothered by stable fly bites as well. In residential or semi-rural areas dogs can be targeted and suffer many bites in bare or short-haired regions such as the ears. Horses and other animals can be bitten on the lower legs. People too are fair game. If you need any convincing of the need to manage compost heaps efficiently or of the need to clean out feed troughs at the end of animal shed trials, a single '*Stomoxys* experience' should do it!



Photograph - Lowan Turton

## 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
21 June, 2008 7.30 pm	Student Presentation Day	Orange Campus of Charles Sturt University
2 July, 2008 7.30 pm	Graeme Smith (Reckitt Benckiser)	Testing consumer pest control products
3 September, 2008	Assoc. Prof. David Emery	Cicadas
5 November, 2008	Alex Roach	Museum Pest Control

#### Venue:

Meeting Room 2  
Ermington Community Centre  
10 River Road Ermington

#### Meetings start at 7:30 p.m.

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 2008

ORDINARY MEMBERS	\$50
COMPANY ASSOCIATES	\$60
STUDENT MEMBERS	\$25
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