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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, 4 July 2007

Speaker: Dr Sarah Mansfield,
Lecturer Agricultural Entomology
University of Sydney

A complex story of biological control

The Eucalyptus Tortoise Beetle *Paropsis charybdis* is a serious pest of eucalypt plantations in New Zealand and has been the target of two biological control introductions: the Southern Ladybird *Cleobora mellyi*, and an egg parasitoid wasp, *Enoggera nassaui*. The parasitoid established well but is now threatened by a newly arrived hyperparasitoid wasp, *Baeoanusia albifunicle*. A further primary parasitoid wasp, *Neopolycystus insectifurax*, has also entered New Zealand unintentionally. Sarah will discuss the effects of intraguild predation and parasitoid behaviour on the efficacy of biological control in this complex system.

General Information

I was heartened by the response to my request last month for articles from members. Several of you have sent or promised articles with photos.

This issue contains a fascinating series of photos and information on grass-harvesting termites from Col Bower as well as a photo of fighting bees submitted by Mark Greco.

Please keep the contributions coming.

Dinah Hales has sent a letter discussing the issues facing our Entomological Society today. The Council would welcome your input on how you think the society should evolve or otherwise.

Tarsus will be sent by email only in the week before each bi-monthly meeting. Please make sure that we have your latest email address or else speak to one of the members to arrange to receive your copy by some other means. Change of address details should be sent to me by email or the Society by post.

Graeme Smith
Circular Editor

POSITION STILL VACANT

PRESIDENT OF OUR ENTOMOLOGICAL SOCIETY

The Entomological Society of NSW still requires a member of the Society with an interest in setting the direction of the Society over the next year. Is this something you think you'd like to try?

You would preside at meetings of the Council and of the Society, provide general guidance in the formulation and development of policy, and act for the Society in such other ways as may further the objects.

The position is supported by an experienced Council who look forward to somebody stepping into this leading role.

If you would be interested just contact any of the Council members.

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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

The Changing Face of Secondary Pests in Australian Cotton

A synopsis of the talk presented at the May meeting

The primary pest species of Australian cotton are *Helicoverpa armigera* and *H. punctigera*. Uncontrolled *Helicoverpa* spp. in cotton will significantly reduce yield and their chemical control has led to insecticide resistance in *H. armigera*. Following five years of development and testing transgenic Ingard® cotton was commercially introduced into Australia in 1996 to better manage *Helicoverpa* spp in cotton.

In its first commercial season Ingard® required only 43% of the insecticides required on conventional cotton with any sprays applied generally occurred later in the season because of reduced efficacy of the Ingard® plants. Although *Helicoverpa* spp. was well controlled by Ingard® with less total sprays there was speculation at the time that current secondary pests of cotton may become more troublesome. Some reasoned that the sprays that once controlled *Helicoverpa* spp. were no longer applied and concurrent secondary species would now increase unchecked.

At the time, cotton aphid, *Aphis gossypii* was known to be the main aphid pest of cotton throughout the world causing significant problems in Thailand, the Sudan, USSR and the USA. In Australia, cotton aphid had not yet caused wide-spread problems and control failures in cotton were not an issue. Nevertheless, resistance in *A. gossypii* causing control failure was documented in the USA and China so I started monitoring resistance in Australian populations of *A. gossypii*.

From 1995-1998 we did detect resistance in Australian populations of *A. gossypii* but in contrast to the overseas situation, Australian populations were pyrethroid and endosulfan resistant but organophosphate and carbamate susceptible. Control problems in cotton were not evident at that time. However, that changed during the 1998-1999 cotton season with control failures linked to resistance for the first time. The problem aphids were restricted to the Emerald area and they could not be controlled with pyrethroid, endosulfan, organophosphate or carbamate sprays.

That sent a shiver down the industry because uncontrolled *A. gossypii* very quickly results in sticky cotton. The problem is caused by the abundant aphid honey dew contaminating the open cotton bolls that subsequently become sticky and discoloured by sooty mould. Sticky cotton incurs a significant price penalty. More importantly significant sticky cotton could ruin the good reputation of Australian growers for supplying a consistently superior quality product. For that reason aphid control became a priority and an aphid resistance management strategy was included into the Cotton Pest Management Guide. The secondary status of *A. gossypii* in Australian cotton was changing.



A resistance management strategy underpinned by resistance monitoring has been progressively developed and refined since those first Emerald failures. Without a magic insecticidal bullet the control strategy included an integrated approach with:

- Resistance management based on chemical alternation.
- Suggest that growers consider all aphid control options including endosulfan.
- Suggest cotton growers target over wintering aphids and their harbourages for control to prevent resistant aphid populations persisting season to season.
- Management to consider monitoring, rotation, planting insecticide, spray failures, on farm hosts, bunchy top, beneficials

Despite a comprehensive integrated control strategy resistance frequencies to the key IPM compatible carbamate remained unsustainably high. This was likely caused by cross resistance because in *A. gossypii*, organophosphates confer cross resistance to some carbamates including the key IPM carbamate. So if there is resistance to any one product it will also

compromise the effectiveness of the others. The effective management of *A. gossypii* required the limited use of the IPM compatible carbamate by strategic use limitations. When combined with the drought and the progressive introduction of newer chemistries *A. gossypii* has come under control.

In 2004-2005 new transgenic cotton known as Bollgard II[®] was made available to Australian cotton growers. This twin gene 'stacked' variety has improved efficacy against *Helicoverpa* spp. and is less prone to *Helicoverpa* spp. resistance development. For that reason plantings of Bollgard II[®] were significantly greater than for the Ingard[®] variety. Interestingly, since the introduction of Bollgard II[®] aphids have been less of a problem with green mirid, *Creontiades dilutus* requiring targeted control. It is possible that the secondary pest complex in Australian cotton is again changing.

Acknowledgments

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General Interest



Photo - Peter Lister

Marc Greco has sent in this image of the native Stingless Bee *Trigona carbonaria* and the introduced Honey Bee *Apis mellifera* fighting after *A. mellifera* tried to invade the *T. carbonaria* nest.

The big bee lost the fight!

May meeting- Show & Tell

Lily Caterpillars - *Barbara May*

At the May meeting of the Ent. Soc. of N.S.W. I showed a group of lily caterpillars, longitudinally striped in white, yellow, red and black, with two broader cross-bands of black, one near the end of the body, and one at the junction of thorax and abdomen. These caterpillars were collected on *Clivea* plants, which they damage severely, and therefore they are unpopular with gardeners.

Also some adult moths were shown which were bred from this species last year – beautiful Noctuids with white wings marked in yellow, black and red. From Ian Common's "Moths of Australia" this species was identified as *Calogramma picta* which has now been moved to the genus *Spodoptera* along with the cluster caterpillar *S. litura*. So that would make it *Spodoptera picta*. However, Graham Goodyer asserts it is *S. festiva*.

This is an Australian native species, originally feeding on *Heterocallus orentoaca*, according to Common, but it thrives variously on a number of different lilies. *Crinum pedunculatum*, the native swamp lily is one. The introduced *Clivea* is another; also ribbon grass.

It was noted that *Clivea* leaves on which these caterpillars were found, are much tougher than *Crinum* or ribbon grass. In fact, the caterpillars preferred the softer leaves when offered them. They skeletonise the harder *Clivea*, at least when they are young, leaving the white cuticle of the leaf behind. They actually killed some *Clivea* plants, as groups of fifty may feed together.

There are five instars, ranging from three days for younger ones to two weeks or more for final stage larvae.

When the larvae were obviously full grown and should have pupated, they went on eating (in the warm house in June) and only pupated after being banished to winter nights outside.

Ku-ring-gai Festival of Wildflowers 2007

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"

The Festival is held on the weekend **25-26 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 expected to be 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!

Insect of the Month

***DREPANOTERMES*- Grass Harvesting Termites – Colin Bower**

Near Pooncarie in western NSW on 13 March, 2006, I was fortunate to observe and photograph the above ground harvesting of dead grass and other plant material by termites of the genus *Drepanotermes*. The accompanying photos illustrate the enormous amount of activity that was occurring on the soil surface. Brief observations of another bout of harvesting by the same species near Rankins Springs in April 2007 are also recorded here.

Drepanotermes is an endemic Australian genus of 23 species. The soldiers are characterised by ‘long sickle-shaped mandibles, usually with a prominent tooth, larger on the left mandible than on the right’ (Watson and Gay 1991) (Plate 1). While seven species of *Drepanotermes* are known to build generally low mounds above the soil surface, most are entirely subterranean, so that their presence in the landscape is not obvious (Watson and Gay 1991). The species in the observations reported here had no surface mound and entered the nest through inconspicuous holes at the soil surface (Plate 2, 3 and 4).

Activity by *Drepanotermes* at Pooncarie occurred after a night of light rain during extreme hot, dry drought conditions. The rain caused a temporary rise in humidity with cloud cover persisting the following morning when the termites were active. Observations were made between 9.30 and 10.30 am in vegetation dominated mainly by Bluebush (*Maireana*) species on a flat sand plain.

The worker termites streamed out of the nest holes and followed trails to nearby harvesting areas, generally less than 50 cm from the nest. The workers chewed the stems of dead grass and other vegetation into lengths that could be carried back to the nest, from a few to 12 or more mm long (Plates 2, 3 and 4). It was interesting that workers appeared to cooperate in cutting through plant stems (Plates 5 and 6). However, each piece was generally carried back to the nest by one worker. Where two or more workers became involved, it was a case of ‘too many cooks spoil the broth’, and progress was slow.



Plate 1- *Drepanotermes* soldier



Plate 2- *Drepanotermes* workers and one soldier at nest entrance concealed by wood fragments (lower centre)



Plate 3- *Drepanotermes* workers dragging cut grass stems to entrance hole of nest (lower left corner)



Plate 4- *Drepanotermes* workers carrying harvested grass stems into entrance

The activity at the nest entrance was frenetic with workers often converging from several directions. Astonishing amounts of material disappeared into the nest in a short time. Soldiers were only obvious near the nest entrance and didn't go out to the foraging areas with the workers.

Because they are often active in daylight outside the nest, *Drepanotermes* species are pigmented, presumably for protection from UV light. By contrast, species that spend all their lives in darkness, either within the nest or within foraging tunnels, lack pigmentation. The accompanying photographs show that the soldiers are more highly pigmented than the workers, possibly because they spend more time out of the nest than the workers do.



Plate 5- *Drepanotermes* workers cooperating to sever grass stem

At Rankins Springs, similar behaviour by the same species was observed on 22 April 2007 at approximately 2 pm on a cool, partly cloudy day. Activity continued for about 15 minutes, but was abruptly terminated by the arrival of Meat Ants, *Iridomyrmex purpureus*, around the nest and harvesting areas. Clearly, an alarm signal had been emitted by some individuals, causing all to rapidly retreat to the nest, after which the Meat Ants continued to search the area for some time.

Reference

Watson, J.A.L. and Gay, F.J. (1991). *Isoptera*. Chapter 20. In *Insects of Australia*. Volume 1, Second Edition. p. 330-347. Division of Entomology, CSIRO. Melbourne University Press.



Plate 6- *Drepanotermes* workers cooperating to sever grass stem

Letter from a Member

What Future for the Society?

Dinah Hales

May 2007

A few years ago, the Entomological Society of NSW celebrated its 50th anniversary, and all present hoped that it would have many successful years ahead of it. Unfortunately, though, it seems to be struggling and is unable to fill positions on council, in particular the crucial position of president. Why has this situation come about, and are there any solutions?

My first remark is that the difficulties of the Society are nobody's fault, and especially, they are not the fault of current or recent councillors, some of whom travel considerable distances to attend council and general meetings of the Society. They have made every effort to advertise the Society's activities, and a result of this is that attendance at meetings has remained fairly stable or even increased slightly. All members would surely join with me in expressing admiration and gratitude for their hard work. But some of these people have been on council for repeated terms, not because they are hogging the power, but because there is a lack of members both competent and willing to take on council positions. A short-lived Indian summer in 2006, when new members of the Society joined Council, has turned back this year as two discontinued their positions and one of them even resigned their membership.

Many factors have contributed to the current difficulties. Perhaps the most obvious is the decentralisation of entomology within the state and within the city. Potential members have been moved away from Sydney, or to the very borders of the metropolitan area. The closure of BCRI Rydalmere has removed what was once the key membership source, as well as removing our access to a familiar and comfortable venue for meetings. Any organisation forced to change its venue or program of activities is likely to suffer a decline in participation (we see the same with our radio yachting clubs).

Decentralisation, however, is not our only problem. We might ask why we don't get new members from among the students, especially the postgraduates, at the various universities in the Sydney region. For some years post-Rydalmere, the Society maintained its position with the support of staff and students from the University of Western Sydney, but most have drifted away, either too busy or too far away to participate. Macquarie University, UTS, Sydney University and Westmead Hospital are all within geographical possibility. Although we have had some excellent speakers from these institutions, their visits to our meetings don't translate into active membership. We only see one or two of their staff regularly at meetings. Entomologists from the Australian Museum may understandably find it easier to attend meetings held at their own site by the Society of Insect Studies. I don't know how many of them do participate in that society, which has historically had its emphasis more on amateur insect studies. University undergraduate students are commonly working part-time and have little spare time or energy for societies such as ours. Unfortunately, the perceived weakness of the Society in itself probably engenders caution in potential younger members. ("Will I be forced to take on a management role I don't want?" "Will I feel under an obligation to come to meetings whether I want to or not?")

However valid the arguments above may be, they are not the only ones. The Society has risen from its own ashes more than once. But the 21st century has brought about new challenges. Some reasons for our failure to recruit might be related to the way the working environment has changed since the Society was first formed. Then, work tended to be less frenetic, less tied with red tape, with less performance pressure. Institutions made less effort to stimulate members with in-house workshops and seminars, so that the benefits of outside meetings were accentuated. There was no Australian Entomological Society providing a national forum and system of contacts between entomologists, and the state-based, or realistically, the city-based society, had a concomitantly more significant role. Even while Clarrie Chadwick was still president, some of the younger members of the Society (including Fred McDonald, Andrew Beattie and myself) were arguing that they did not need monthly meetings. Now, everyone works with a much greater sense of urgency, leaving less time and energy for additional meetings. Scientists have access to a wide range of seminars within their own institutions. They tend to think of themselves as working on a particular problem, or in a particular discipline (such as genetics, animal behaviour or plant protection) rather than on a particular taxon (such as insects). They are better informed on career pathways open to them, and have less need for personal contacts who may be able to "pull strings" to help them in finding employment. Do any of the current active members have any strings to pull, anyway? Working entomologists can now network instantly via the internet with like-minded scientists all over the world. Our own website has failed to achieve much attention, because it needs a webmaster who is both technically competent in website management and also engaged in the affairs of the Society, and such a person doesn't seem to exist.

Current scientists thus have less need for what our Society has traditionally offered, and the Society has not really changed its format much over the last 30 years or so, by my observation. During all that time, it has not been numerically strong, especially in terms of meeting attendance, although up till now it has been able to fill the council positions and has even needed the occasional ballot. Nearly 30 years ago, I remember Andrew Beattie phoning Sydney members before each meeting to exhort them to attend. What kept us going, even with difficulty, 10, 20, 30, 40 and 50 years ago is seemingly not attractive enough as we move through the 2000s. If you ask me what positive suggestions I have – a reasonable question - I have to say I have none. My past suggestions to assuage the post-Rydalmere state of the Society were universally unsuccessful and I have nothing new.

Apart from professional scientists, amateurs are a possible source of new members. I wonder how many amateur entomologists, of any age, are still out there. Kids have many other distractions and the conservation movement has made insect collecting politically incorrect, even where it is legal. Real or perceived dangers in the environment and higher housing densities make it more difficult for young people to develop an interest in natural history. Child protection legislation is a further (though surmountable) barrier to activities involving children.

In general, if there is a need for an organisation, it will persist. Any potential member (or councillor) subconsciously weighs up the costs and benefits of joining and participating. Nobody should be explicitly or implicitly asked to justify why they choose not to join, to attend, or to take a position on council. All those things should be free choices for the individual. To get a handle on why the Society seems to be in trouble, we need to ask the following questions.

- What does the Society really offer?
- Who needs what it offers?
- Who needs it enough to place attendance above competing demands on time?
- Do the people who might need the Society know about it?

If it's hard to find positive answers to these questions, we are left with three options.

The first is to make some substantial change that will attract more interest, but the recent membership has been unable to think of anything (this is not a criticism!). It goes without saying that any new initiative will make more work for someone, so that if members want to suggest new activities, they will most likely be called upon to help put them into practice. Organisation of new activities cannot be left solely to the hard-working Council.

The second option is to maintain the *status quo*, though it is questionable how long it may be viable to do so. I thought we might not be legal without a president, both in terms of our own constitution and the conditions of our incorporation, but could not find confirmation of this, and will leave it to Council to determine whether our continued operation is legitimate. A redistribution of positions within Council (to provide a president) could perhaps strengthen it, and it might be easier to attract new council members if the president's position was already filled. The financial situation of the Society is not considered here.

And the third option is to consider winding up the Society, unpalatable though that may be. Keeping the Society alive merely for sentimental reasons places an unnecessary load of work and worry on those councillors who have accepted election for the current year. Despite the gloom and doom of this document, I am as sentimental as anyone and would be delighted to see someone come with a fairy wand and make everything OK. As an alternative *modus operandi* for the remaining active Sydney members, I thought the Australian Entomological Society had some arrangement for supporting local groups, but could not find this in the current constitution or by-laws. It could be worth asking them. It could also be worth asking the other state-based entomological societies or naturalists' clubs what their experience is at present with membership and participation. If they are successful, how are their circumstances different from ours, and what are they doing that we might want to borrow? If their participation rates are falling, it would suggest that the trend is global rather than local.

In conclusion, both Council and the general membership need to give a cold, hard look at the Society's current situation to determine whether it can be or should be kept alive, in this milieu of low participation.

Bi-monthly Meetings

The Council will continue the operation of the Society while we try to fill the position of President. However, the Society will meet only **BI-MONTHLY** until further notice. General meetings with a speaker will 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.

The next meetings of the general meeting Entomological Society of NSW will be held at 7.30 pm on July 4 at the usual venue.

Seminar series 2007

Date	Speaker	Title
4 July	Sarah Mansfield (University of Sydney)	Predator and parasitoid behaviour and foraging
5 September	Peter Gillespie (DPI- Orange Agricultural Institute)	"Australian whitefly diversity"
7 November	Graeme Smith (Reckitt Benckiser)	Testing consumer pest control products
2008 TBD	Cameron Webb (Westmead Hospital)	Mosquitoes - Title TBD

Venue:

Meeting Room 2
Ermington Community Centre
10 River Road Ermington

Meetings start at 7:30 p.m.

The first part of the meeting covers general business for the Society. This is followed by “Show & Tell” where members bring in interesting specimens, usually live. Talks by invited speakers follow and run for around 45 minutes, with 10 minutes for questions. Afterwards a supper is provided. 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

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MEMBERSHIP FEES 2007

ORDINARY MEMBERS	\$50
COMPANY ASSOCIATES	\$60
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