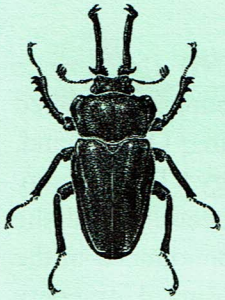
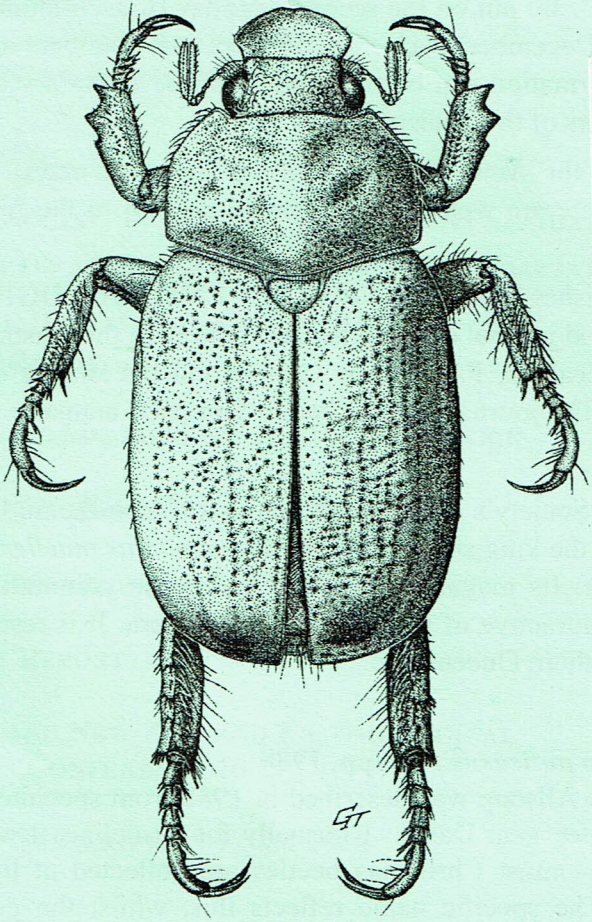


ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN



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Volume 34, Issue 3, May 2006

ISSN 1037-2989

The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has promoted 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 in the Goddard Building, University of Queensland at 7.00 pm on the second Monday of each month (March to June, August to December) each year. Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society.

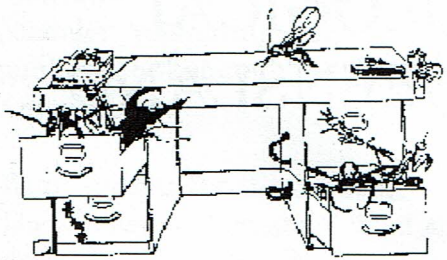
Contributions to the *News Bulletin* such as items of news, trip reports, announcements, etc are welcome and should be sent to the *News Bulletin* Editor.

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: ***Wambo puticasus* Allsopp, 1988**

Wambo puticasus Allsopp was described in 1988 from specimens collected at Lake Broadwater, near Dalby. Unusually for a ruteline, it was collected in a pitfall trap – most Christmas beetles are collected at light or from feeding trees. The specific name reflects this, whilst the generic name honours the shire in which it was collected. Geoff Thompson did the drawing, the original of which is a prized possession of Peter Allsopp.



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THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

GENERAL MEETING:

Minutes of the General Meeting of the Entomological Society of Queensland Inc. held in Room 139, Goddard Building, The University of Queensland, on 8 May 2006, at 7pm. Chaired by Peter Allsopp.

Attendance:
Peter Allsopp, Sassan Asgari, Andrew Atkens, Richard Bull, Chris Burwell, Bronwen Cribb, Murdoch De Baar, Rod Eastwood, Elizabeth Exley, Graham Forbes, Klaus Gottschaldt, Lionel Hill, Mark Hunting, Kevin Jackson, Frank Jordan, Ross Kendall, Peter Mackey, Gunter Maywald, Geoff Monteith, John Moss, Don Sands, Michael Sands, Elly Scheermeyer, Owen Seeman, Jeff Wright, Susan Wright.

Visitors:
Michelle Baker, Peter Hendry.

Apologies:
Helen Nahrung, Fred McDonald, John Nielsen, Matthew Purcell, Margaret Schneider, Natalie Spiller.

Minutes: The minutes of the April General Meeting were circulated in the News Bulletin Vol. 34 Issue 2. It was moved by Sassan Asgari, seconded by Susan Wright, that the minutes be accepted without amendment.

Nominations:
No nominations of new members have been received.

General Business:
The President reminded the membership present that there is provision in

the News Bulletin for short articles from members and urged members to consider submitting such articles. This does not constitute formal publication, but could be formalized later, if required, via the *Australian Entomologist.*

Three entries for the Student Award have been received by the Society. The winner will be announced at the next General Meeting, where he or she will hopefully present their project as a short presentation to the membership.

Main Business:
The main business of the meeting was a presentation by **Rod Eastwood**, entitled "**Ant association and speciation in Lycaenidae (Lepidoptera): Consequences of novel adaptations and Pleistocene climate changes**".

Vote of Thanks:
Don Sands gave the vote of thanks for this presentation.

As there was no further business, the Chair closed the meeting.

NOTICE FOR NEXT MEETING

Notes and Exhibits
Tuesday 13th June 2006 at 7pm
Room 139, Goddard Building
University of Queensland, St Lucia

Student award and presentation
Speakers including Ross Kendall and John Moss "Interesting albinistic and melanistic aberrations of *Eurema* and *Catopsila* (Lepidoptera: Pieridae and Coliadinae) butterfly species"

MAIN BUSINESS:

Ant Association and Speciation in Lycaenidae (Lepidoptera): Consequences of Novel Adaptations and Pleistocene Climate Changes

By Rod Eastwood

The talk covered part of my PhD project in which I used genetic techniques to test hypotheses about the role that ants play in diversification of Lycaenidae. I tested these hypotheses at the population and species levels. The specific question addressed in my talk was: do ants enhance diversification in Lycaenidae?

Associations between butterflies and ants are a well-known phenomenon in the Lycaenidae. Lycaenid larvae have special glands in their cuticle that secrete sugars and amino acids that are attractive to ants. In return, the ants provide defence against predators and parasitoids, and many butterflies have come to depend on the presence of ants for survival. These obligate associations are often species specific and this specificity is highlighted in many phylogenies where there is a strong correlation of lycaenid species or higher clades associating with particular ants. In addition, the family Lycaenidae make up about one third of all butterfly species, and since they are the only family that associates with ants, it is thought that ant association may have enhanced lycaenid diversification.

There have been several mechanisms proposed to explain the correlation of these obligate myrmecophiles associating with different ants:

- The first mechanism is that the specialised requirements that butterflies have for specific host plants and ants may result in small population sizes and higher levels of fragmentation. This could lead to higher levels of allopatric speciation. At the population level this should be detectable as high levels of genetic differentiation among subpopulations, especially at a local scale.

- A second mechanism that could explain how ants might influence diversification could be if a subpopulation of butterflies made a radical attendant ant shift. This could lead to specialisation on the novel ant resulting in an escape-and-radiation mode of diversification. At the population level this could be detected as genetic discontinuities among butterfly subpopulations associating with radically different ants.
- A third mechanism that may result in butterflies associating with different ants could be just a coincidental result of vicariance. If a subpopulation of a widespread lycaenid species that associated with several different but closely related ants became isolated, and this coincided with a locally distributed attendant ant, then speciation could result in lycaenids associating with different ants. This could be observed at the population level if an isolated subpopulation of butterflies associating with a locally distributed ant partner was genetically divergent from the remaining butterfly population.
- Finally, parallel cladogenesis could occur if a butterfly population associating with a single ant species across its range was fragmented leading to co-diversification of the butterflies and the attendant ants. Evidence at the population level would be seen as parallel genetic differences between isolated populations of butterflies and ants.

To test these hypotheses at the population level, I sequenced a 615-nucleotide fragment of the COI gene from 248 *Jalmenus evagoras* and 66 attendant ants. I collected hostplant details at each of the 22 sites; and I used several kinds of analysis including AMOVA, NCA, mismatch distribution, PAUP and MDIV. The results were as follows:

- Populations of *J. evagoras* did not show high levels of genetic structure over small spatial scales consistent with hypothesis one.
- *J. evagoras* was found to associate with seven closely related ant species across its range, and since no radical attendant-ant shift was detected, the second hypothesis was also not supported.
- The best predictor of butterfly genetic structure was geography, but since there was also a geographical bias to the ant species' distributions, fragmentation of butterfly populations coincident with

locally distributed ants could result in lycaenid sister species associating with different ants. However, this was unlikely to be the case with *J. evagoras* since there was some crossing over of butterfly and ant populations among the different regions.

- Populations of the habitat specialist *eubulus* have recently diverged from *evagoras* and are attended by ants that have recently diverged from ant species attending *evagoras* populations nearby. This is consistent with a signal of parallel cladogenesis, which does support the fourth hypothesis; however, this is not a causative association since the ants would play only an incidental role in the diversification process.

Thus, there was no evidence of ant-enhanced diversification at the population level.

For those interested in a more detailed description, the first part of my talk has been published as: Eastwood, R., Pierce, N. E., Kitching, R. L., and Hughes, J. M. (2006) Do ants enhance diversification in lycaenid butterflies? Phylogeographic evidence from a model myrmecophile, *Jalmenus evagoras*. *Evolution* **60**(2): 315-327.

Details of the methods I applied at the species level to test for the influence of ants on diversification (the second part of my talk) have not yet been published and, since I developed new methods for interpreting the results of comparative analyses in a phylogenetic context, they are not reproduced here. However, I can say that ants were shown to influence diversification.

Questions:

Q.: It is commonly observed that males copulate with females on emergence from pupa. Does this have any bearing on your research?

A.: Very much so. One of the 'prerequisites' for sympatric speciation (via a hostplant shift) is that mating should take place on the hostplant. In my research I considered 'attendant ant integrity' analogous to 'host

plant integrity', so one of the mechanisms that can help to maintain the integrity of a novel ant association once a shift is made, is that *Jalmenus* species mate in the presence of their attendant ants. Many of the isolating mechanisms that are predicted to be important for sympatric speciation can apply equally well to my model of allopatric speciation followed by secondary contact. In fact, the mechanisms may even be relaxed under my model and still contribute significantly. The behavioural changes associated with major ecological shifts can evolve quite rapidly in allopatry.

Q.: From the point of view of chemicals, I presume it is the butterfly leading the ants rather than the other way around in evolution. Is it minor or major shifts involved in the chemistry?

A.: Yes, the butterfly larvae mimic the brood pheromones of their attendant ants, so the ants are not aggressive. But the larvae also produce more generalized chemical signals that can appease a variety of ant species. The changes in butterfly larval chemistry would be costly so it would be a rare event.

Q.: Do you have any clues as to how the major shifts occurred?

A.: No, but there is plenty of evidence that it does happen. Apart from lycaenid phylogenies where there is a signal of sister taxa associating with different ants, there are many records of unusual associations, which usually occur during times of population expansions. Most unusual associations do not persist.

Q.: Could the sound generation (stridulation) have anything to do with this? Could it override some of the chemical cues?

A.: I don't think that stridulation is as important as the chemical cues. We do know that caterpillars (and pupae) that stridulate can attract more of their attendant ants, but I don't think anyone has tested the effects of stridulation on novel ant species.

Q.: In the case of the species that switched to mistletoe, did it persist on the new host?

A.: The population persisted for three years until the mistletoe was cut down by the groundsmen (on campus at Griffith University). Many *J. evagoras* completed their life cycle on the mistletoe.

Q.: Was the mistletoe on Acacia?

A.: The mistletoe was growing on a small eucalypt but it was very close to the ground and close to an acacia on which *J. evagoras* was breeding. In Queensland, *J. evagoras* populations usually breed on small acacias up to 2-3 m tall because their attendant ants do not normally forage above this height. So *J. evagoras* would not normally come in contact with mistletoe, which mostly grows higher up in the eucalypt trees.

Q.: Where does the nomenclature that you use for these bio-geographic divisions (eg, Cassillis Gap) originate?

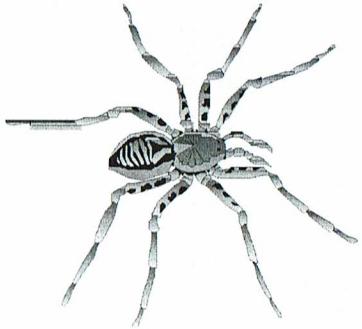
A.: I resurrected the names from some older literature published in the 1920s and 1940s. The influence of the Cassillis Gap (Hunter Valley) on butterflies was known to G. A. Waterhouse and is a well-known biogeographical barrier for many taxa. The gap was characterised by lowland rainforest and wet schlerophyll for long periods of time, and this would have been a significant barrier to *J. evagoras*, which prefers open eucalypt forest. In recent years up to 99% of the vegetation has been cleared and there is now evidence that *J. evagoras* is moving across the gap.

New Honorary Member of the Society, David Hancock

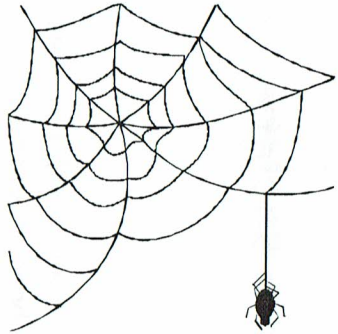
In the last News Bulletin, Council announced the award of Honorary Membership to Dr David Hancock. Having been a country (and overseas) member for much of his membership, we thought it appropriate to outline David's entomological career.

David first became a member of the Society in 1969, and served as treasurer 1991-1994 and editor of the *Australian Entomologist* from 1994 to the present. He obtained BSc and MSc degrees from the University of Queensland and a DPhil from the University of Zimbabwe. Swallowtail butterflies and tephritid fruit flies have been is major research interests. His first full-time entomological employment was with tsetse fly control in Africa, having "been inspired by Doug Kettle's lectures. On returning to Queensland, David worked on a Cape York project with Geoff Monteith and Jiro Kikkawa and with QDPI on a Cooloola fruit fly project with Dick Drew. Another stint in Africa followed, as a deciduous fruits entomologist and then as curator of entomology at the Natural History Museum in Bulawayo. This was followed by a year with FAO on an invasive fruit fly project in Suriname. On his final return to Queensland, David worked for QDPI on ACIAR-funded fruit fly projects in SE Asia and the Pacific with Dick Drew, and then on the successful papaya fruit fly eradication program in northern Queensland where all of the above experience came into play. Becoming disillusioned with "new-age" employers, David now works as a fruit fly identification consultant, interspersed with editing and attempting to write another novel.

This wide experience and his contributions to entomological research and pest eradication, as well as his editing expertise, made David an ideal choice for Honorary Membership.

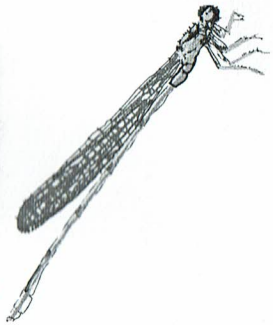


Bug Catch 2006



The other 99% in our Protected Areas ....
What are we preserving?

The Environmental Protection Agency and Queensland Parks and Wildlife Service would like to extend an invitation to the Entomological Society members for three days of collecting at Double Island Point, Great Sandy National Park. Enjoy conducting a preliminary inventory of the invertebrates of the area, and just getting together for a fun and informative weekend. Limited accommodation provided at the lighthouse cottages.



Where : Double Island Point (4WD access only)

When : Friday 20 October to Sunday 22 October 2006

Meals : BYO food (gas cookers provided)

Please fill in the registration form below and forward onto Jenny Greenland, Environmental Protection Agency, PO Box 15155, City East, Queensland 4002. Closing date for registration is 22 September 2006. For further information contact Jenny Greenland on phone 3247 3299 or 0402 952 875 or email jenny.greenland@epa.qld.gov.au

.....

Registration

Name:.....

Address:.....

Contact Phone number:.....

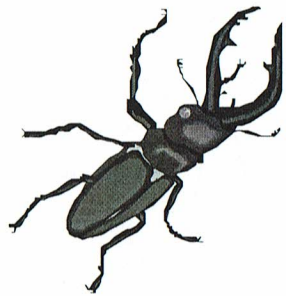
Email:.....

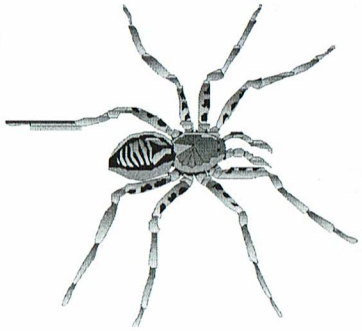
I will attend (please tick):

☐ Friday 20 October 2006

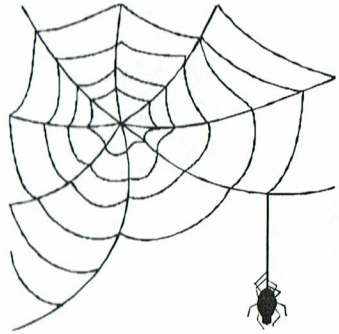
☐ Saturday 21 October 2006

☐ Sunday 22 October 2006



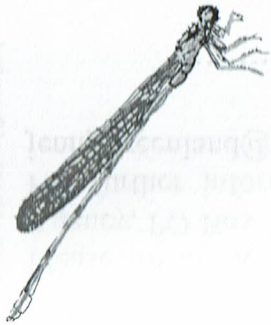


Bug Catch 2006



The other 99% in our Protected Areas ....
What are we preserving?

The Environmental Protection Agency and Queensland Parks and Wildlife Service would like to extend an invitation to the Entomological Society members to a flora/fauna survey at Bringalilly State Forest (near Inglewood) . Enjoy conducting a preliminary inventory of the invertebrates of the area, and just getting together with other researchers. Accommodation (limited beds), good kitchens and shower block facilities provided at the DNRMW Robert Wicks Research Station (between Inglewood and Millmerran), or tents/vans can be set up on the grounds.



Where : Bringalilly State Forest

When : Monday 23 October through to Tuesday 31 October 2006

Meals : BYO food

Please fill in the registration form below and forward onto Jenny Greenland, Environmental Protection Agency, PO Box 15155, City East, Queensland 4002. Closing date for registration is 22 September 2006. For further information contact Jenny Greenland on phone 3247 3299 or 0402 952 875 or email jenny.greenland@epa.qld.gov.au

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Registration

Name:.....

Address:.....

Contact Phone number:.....

Email:.....

I will attend the following dates:

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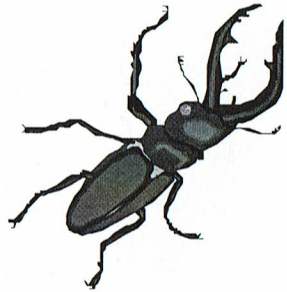


Permit Report Time

To all members who have been issued with endorsed copies of collecting permits held by the Entomological Society of Queensland.

It is a requirement of the permit that a report is sent by the Society to the EPA. This report is due in August and it is now time to start gathering the information.

The information the EPA requires is: latitude and longitude or grid references, datum used, locality information, collector, date, method of collection, habitat, life stage, sex (if known), altitude, scientific name (common name if there is one) and number collected. In the case of butterflies I need to know if a specimen was taken or if the record is an observation only. They also ask for information on where the specimens are held. There is an excel file which your data should be entered, so please contact me if you require this form.

Your **reports are due by 12 August 2006** so I can collate the information and then send it on. Reports sent electronically would be very welcome as it saves my fingers but printed reports (especially in the case of nil reports) are fine. **Even if you haven't collected anything, the EPA still requires that a report be lodged by every holder of the permit.** If there are any queries or problems my contact details are on the back of the bulletin. If I don't hear anything to the contrary, any report I receive may be used in the bulletin for a future update on the permits.

A reminder also that **members who hold permits must be financial** members of the society, so please check that you have paid up for 2006 and **could anyone who has changed their email address since applying for the permits please contact me with the new details?**

Looking forward to seeing your reports.

Susan Wright

Welcome to the Australian and New Zealand Entomological Societies' Conference

Biosecurity—Caring for the Environment and Agriculture

INVITATION

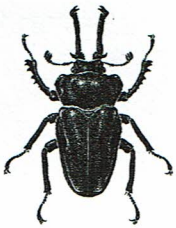
On behalf of the organising committee, we extend a warm invitation to you to attend a joint conference of the Australian and New Zealand Entomological Societies to be held in Adelaide, South Australia from September 24 – 27th 2006. The conference will bring together approximately 150 researchers (scientists and students) from a broad range of interests to discuss the latest research in entomology. The conference has the theme of "Biosecurity – Caring for the Environment and Agriculture" and part of the scientific program will be devoted to this area. However, intending delegates are encouraged to submit papers/posters on their own areas of expertise and interest as the overall program will be designed to cover a much broader range of topics than just this theme.

All intending delegates are encouraged to submit an "Expression of Interest Form" from our website (www.aesnzconference2006.com) as soon as possible to assist the organising committee in the early stages of the conference planning.

THE VENUE

The conference will be held on the North Terrace Campus of the University of Adelaide that houses most of its teaching and research facilities. Set in the cultural heart of the city on the northern edge of the city centre, the North Terrace Campus offers excellence in its educational and social facilities. Established in 1874, the North Terrace Campus is home to the schools of Physics & Chemistry and Molecular & Biological Sciences; as well as part of Earth & Environmental Sciences. The School of Agriculture and Wine is located on the Waite Research Precinct in the suburbs of Adelaide about 8 kms from the city centre. SARDI, the Australian Wine Institute and CSIRO are also co-located on this Precinct.

For more information on registration, sponsors and contacts, visit our website www.aesnzconference2006.com or contact Sally Brown Conference Connections, by mail: PO Box 108 KENMORE 4969; Email: sally.brown@uq.net.au; phone: 07 3201 2808; or fax: 07 3201 2809.



THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.

Founded 1923
Incorporated 1971

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Yours sincerely
Matthew Purcell (Hon. Treasurer)

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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.

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	Institutions	**A$40pa**

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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 4068, Qld.

Back cover gives contact details of individual council members.

NOTICE OF NEXT MEETING

The next meeting of the Society will be held at 7pm on **TUESDAY** 13th June in Room 139, GODDARD Building, University of Qld. The main business will be the presentation of the student award and notes and exhibits by speakers including John Moss and Ross Kendall. Refreshments will be served before the meeting at 6:30pm in the tea room, Level 2 of the Goddard Building (to the right of the main stairs), with a gold coin donation required. No donation is required to attend the talk alone.

VISITORS ARE WELCOME

DIARY DATES 2006

Meetings held usually every 2nd Monday of the Month

13 Jun	Notes & Exhibits	Student Prize Award **TUESDAY!!!**
July	**No meeting**	
14 Aug	Owen Seeman	Passalid beetles and the zoo in their luggage
11 Sep	Scott O'Neill	

HONORARY LIFE MEMBERS OF THE SOCIETY

R.A.I. Drew E.M. Exley D. Hancock D.S. Kettle
M.J. Harslett R.P. Kleinschmidt E.J. Reye