ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.

NEWS BULLETIN

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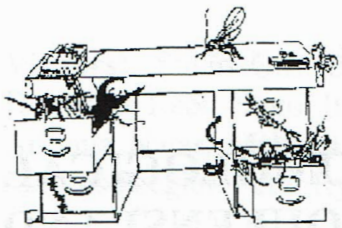
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, and particularly in Queensland. Membership is open to anyone interested in Entomology. The Society promotes liaison among entomologists 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 prospective 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 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 make it one of the most attractive of all Australian Coleoptera. It is restricted to the rainforests of Northern Queensland.

COVER: Aboriginal stylised depiction of a biological control agent (*Malacorhinus irregularis*) and its host plant (*Mimosa pigra*) on a background piece of torn bark, by Otto Fahey and Soussanith Nokham.



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The cover design is derived from the logo developed for the XI International Symposium on the Biological Control of Weeds to be held in Canberra in April 2003. See www.ento.csiro.au/weeds2003

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The issue of this document does **NOT** constitute a formal publication for the purposes of the "International Code of Zoological Nomenclature 3rd edition, 1985". Authors alone are responsible for the views expressed.

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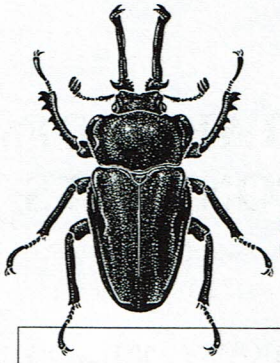

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

SPECIAL NOTICE

The October general meeting will host a high profile international speaker, **Dr David Grimaldi, Curator, Division of Invertebrate Zoology, American Museum of Natural History.** David will speak on "Sociality and Success in insects: insights from the fossil record". David will be visiting Brisbane for the International Congress of Dipterology. To take advantage of this, the October meeting will be held on 7 October, the FIRST Monday of the month rather than the customary second. Please note this change in your diary and spread the news about this exciting presentation.

MINUTES OF THE GENERAL MEETING: 12 August 2002

Minutes of the General Meeting of the Entomological Society of Queensland Inc. held in Room 388, Goddard Building, The University of Queensland, on, 12 August 2002, 7.00 pm.

Attendance: Claire Baker, Jenny Beard, Rod Eastwood, Elizabeth Exley, Stephen Frances, Angela Hatch, Tim Heard, David Holdom, Brian Kay, Ross Kendall, David Merritt, John Neilsen, Scott O'Neill, Sarina Pearce, Lindsay Popple, Andrew Ridley, Margaret Schneider, Matthew Shaw, Gimme Walter.

Visitors: Stuart O.E. Baird, Tony Campbell, Judy Capes, Anna Donahoo, Leon Hugo, Inaki Iturbe-Ormaetxe, Elizabeth McGraw, Adriana Najar, Mehmet Ozturk, Sebahat Ozman, Andy Reeson, Markus Riegler, Peter Ryan, Natalie Spiller, Mark Wade.

Apologies: Bill Crowe, Greg Daglish, Manon Griffiths, John Holte, Chris King, Judy King, John Moss, Narelle Power, Claudina Rodriguez, Don Sands, Cas Vanderwoude, Dave Walter, Damian White, Susan Wright, Meron Zalucki.

Minutes: The minutes of the last General Meeting, the Annual General Meeting, were circulated in the News Bulletin Vol. 30 Issue 4.

Moved: Margaret Schneider
Seconded: Gimme Walter

Nominations:

The following nominations were received and are now put before the meeting:

Seemi Khan
Simon Lawson

In accordance with the Society's rules, these candidates will be considered for election at the next meeting.

Elections:

The following nominations were received at the last General Meeting, and circulated in the News Bulletin Vol. 30 Issue 4.

Dr Paul De Barro
Mr David Walker
Wesley Jenkinson

The nominees were elected unanimously.

General Business:

Society President Tim Heard presented the 2002 Student Prize winner Rod Eastwood with a certificate for his award.

The October General Meeting will be held one week early on 7th October.

Main Business:

Professor Scott O'Neill
"Influential passengers: *Wolbachia* infections and arthropod reproduction"

Questions:

Q: There's a whole class of parthenogenetic weevils with bacteria in the eggs, has anyone looked at those?

A: No, I can't tell you, but we've got a web site going at the moment with a database of insect species that have been examined and known to be infected, which might be an easy way to get an initial idea. What you have said about the insects sounds like its more than likely to be *Wolbachia*, or an agent like *Wolbachia*.

Q: These are exclusively parthenogenetic, but there are others that have both parthenogenetic and non-parthenogenetic populations, complicated by polyploidy.

A: Polyploidy might throw a spanner in the works, but it would be good to look at.

Q: How likely do you think it will be that you will be allowed to release genetically modified *Wolbachia*?

A: You mean transgenic *Wolbachia*? I think to release transgenic *Wolbachia* you have to go through numerous regulatory hurdles before it can be done. I'd say it would be a lot more difficult to do it here than it would be to do it in China. I shouldn't be flippant thought, because I think it is something that should be looked at very carefully, and I

would be very discouraging of anybody to be doing any transgenic releases that haven't been really carefully looked at. The reason I have become so interested in the popcorn effect is that it might not be necessary to generate transgenic *Wolbachia* to have major effects. I think the latter story I was talking about is much more of a traditional biocontrol of introducing a bacterial agent into a population to get the genotype your interested in without any modification at all. I think that type of approach may be much sooner into application than some of the more far-reaching ones such as genetically engineering mosquito populations to reduce malaria transmission.

Q: Is there any evidence that it infects mammals?

A: Not directly. In cases where you have nematodes living in cysts in humans, you can detect *Wolbachia* DNA in the blood of people but it looks like *Wolbachia* is not living in those people, its just the release of the dead worms and *Wolbachia* circulating through it. Its clearly been implicating in playing a role in the inflammatory response when people get pathogenesis and nematode diseases, but its not growing in those individuals. But there is some data that I have seen recently that you can grow it in human cell lines in the lab, but we haven't seen a case where actual individuals are harbouring the infection.

Q: The virulence of the popcorn strain in *Drosophila melanogaster*, do you think its a recent mutation or a recent strain invasion of *Drosophila melanogaster*?

A: It was a long-term lab stock of *melanogaster* where we detected it, and when you look at the history of that stock it was subject to ionising radiation in about 1940 as part of a mutagenesis screen, and this group came in and started looking at these flies for a genotype they were interested in. But my feeling about it is that it was probably a result of that radiation screen, although in radiation mutagenesis you

would expect to cause deletion of chromosomes and what we are seeing is the insertion of a piece of DNA, so I think once we get a better idea of what's going on with the rearrangements we'll have an idea of whether it was the result of some sort of radiation mutagenesis event. The interesting this is that we have not found these sort of strains in wild populations yet, we've only found them in lab populations, which may be an indicator that they may not be very effective at spreading into natural populations.

Q: I don't think there's an open hell that transgenic *aegypti* is ever going to get off the ground. I think the background and the current climate, and the 1969 throwing of WHO out of India because of playing with *aegypti* and cries of biological warfare. The other thing about the transgenics game is that they can engineer mosquitoes that may be insusceptible to one particular pathogen but what are they doing about susceptibility to other things? I think your approach is far more superior and logical.

A: I think there are a lot of molecular biologists in the UN working on the generation of transgenic mosquito lines, and your right that mosquitoes don't just transmit malaria, they may transmit other viruses and if you remove control efforts that are meant to reduce population numbers you may exacerbate some other disease. And also its not just one vector that transmits any one disease in any one area, so the techniques would have to apply to a multitude of assemblages of vectors, so huge numbers of hurdles would need to be looked at. There has been a lot of criticism of the research but we are learning so much about the interaction of the parasite's environment within insects, and let's face it we know nothing about what happens really in the insect-parasite or insect-virus interaction, all the knowledge we have is what goes on in humans. And most of these pathogens are really insect pathogens and the viruses are very well adapted to the

insect and so we can learn a lot about that interaction that could open whole new avenues for control. From that point of view its very well worthwhile to see the research being done, whether it actually gets out into the field or not - we are so far away from that point that I don't think we should waste a lot of energy on it at the moment. It is still many many years away.

Vote of thanks:
The long-term society member Associate Professor Gimme Walter was honoured to be asked to make a rare public appearance this month and present the vote of thanks for Scott (actually he was dragged kicking and screaming all the way). But he did a fine job, expressing his appreciation of the clarity with which Scott was able to draw together, and work in the interface between, molecular research and whole organism biology.

The Chair announced that the next meeting will be held on Monday 9th September 2002.

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

Transcripts of presentations from previous meetings

INTRODUCED BUTTERFLY HOST PLANTS –EXAMPLES WITH THE WETLANDS WEED HYGROPHYLLA COSTATA

By Don Sands and Bob Miller

The acceptance of exotic plants by native insects as hosts for their immature stages is known with many examples in pest management of crops, pastures and forestry. In the best-known group of insects, the butterflies, some species have become more abundant and more widely distributed by reproducing on exotic host plants. For example, the 'lemon migrant' [*Catopsilia pomona pomona* (Fabricius)] is seen breeding on the decorative

Cassia fistula more often than on related native hosts. Some butterflies successfully complete their development on introduced plants that have become weeds, including the 'blue triangle' [*Graphium sarpedon choredon* (C. & R. Felder)] on camphor laurel (*Cinnamomum camphora*) and the 'common egg fly' [*Hypolimnas bolina nerina* (Fabricius)] on spinyhead sida (*Sida acuta*) as well as other exotics. This ability to use exotic plants has enabled some butterflies to occupy disturbed urban habitats.

Native hosts of several butterflies adapted to wetlands have been displaced by exotic weeds. Detrimentally affected are the sedges *Cladium procerum,* a food plant for the skipper *Telicota eurychlora* Lower, *Gahnia clarkii* for the swordgrass browns *Tisiphone abeona morrisi* Waterhouse and *Tisiphone abeona rawnsleyi* (Miskin), and the violet *Viola betonicifolia* for the Australian fritillary *Argyreus hyperbius inconstans* (Butler). The native wetland herb *Hygrophylla salicifolia* (Vahl) Nees (Acanthaceae) has also suffered from displacement by weeds, accompanied by a decline and disappearance from many areas in southestern Queensland of two of its herbivores, the 'brown soldier' or 'chocolate soldier' *Junonia hedonia zelima* (Fabricius). *J. hedonia zelima* has always been uncommon between Southport and Maryborough (Braby 2000). Hill and Kitching (1983) recorded a specimen from Sunnybank and one was seen at Indooroopilly in 2001. In northern New Sotuh Wales one was seen near Stott's Island on the embankment of the Tweed River, NSW in about 1987 (Sands unpubl.).

Two exotic *Hygrophila* spp., *H. triflora* and *H. costata* Nees occur in Queensland (Queensland Herbarium) and the plants have only recently been identified to species (not listed by Henderson 1993). *H. triflora* is recorded from Leichardt Creek, Touringowan Shire. *H. costata* (probably of South American origin) became an aggressive weed at Lake McDonald in 1993 (then misidentified as *H. angustifolia*) and it is thought to have been there since the 1980s (K Garraty pers. comm.). *H. costata* is also present at sites

on the Caboolture River, Strathpine and Beenleigh, Queensland (Queensland Herbarium), and near Casino, NSW (Tamworth Agricultural Research Centre Herbarium).

Recently members of the Noosa Parks Bird Observers saw what appeared to be adults of *J. hedonia zelima* at Lake McDonald. The identity of the butterflies was subsequently confirmed by Ms Shirley Rooke and Bob Miller when they collected vouchers and found larvae feeding on the leaves of *H. costata*. This species and another butterfly, *Zizula hylax hylax* (Fabricius), was observed to be very abundant at the edge of the lake on 12 March 2002 and its larvae were found feeding on the flowers of *H. costata*. Larvae of two species of butterfly have successfully transferred from their native host *H. salicifolia* to *H. costata*.

In southeastern Queensland *J. hedonia zelima* and *Zizula hylax hylax* are mostly coastal wetland species, adapted to the uncommon *Hygrophylla salicifolia*, whereas further north both breed on other plants including some adapted to dry inland situations. The relatively high densities of both butterfly species at Lake McDonald are in marked contrast with the lower densities usually observed breeding on their native host in the southeast of the State. Neither are 'threatened' species but both have declined and become sporadic in appearance in the southeastern part of the range through loss of habitat. *J. hedonia zelima* in common with several other Nymphalidae, is a 'vagrant' species, building up in numbers some years from northern migrants and disappearing in intervening years. It was an excellent regional indicator for a 'threatened ecological community', i.e, the coastal wetlands supporting the uncommon *H. salicifolia* (especially those edging melaleuca mono-stands), a plant that has suffered from urban clearing, filling of wetalndsand weed invasion. On the other hand the introduced *H. costata* has the potential to become a serious riparian and wetland weed in sensitive areas, capable of displacing native plant species.

It will be interesting to see if the two butterflies, *J. hedonia zelima* and *Zizula hylax hylax* spread to other areas infested with the weed, have any impacts on the vigour of *H. costata*, maintain their abundance or persist at the breeding sites during the cooler winter months.

References

Braby, M.J. 2000.Butterflies of Australia. Their identification, biology and distribution. CSIRO Melbourne.

Henderson, R.J.F. (ed.) 1993. Queensland Vascular Plants. Queensland Herbarium, Queensland Department of Environment and Heritage.

Hill, C. and Kitching, R.L 1983, in Wally Davies (ed.) Wildlife of the Brisbane Area. 'Butterflies'. World Wildlife Fund Australia. 216 pp.

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OREIXENICA LATHONIELLA HERCEUS WATERHOUSE & LYELL (LEPIDOPTERA: NYMPHALIDAE): A NEW SPECIES RECORD FOR QUEENSLAND

By Don Sands

On 17 April 2002 specimens of the small satyrine butterfly *Oreixenica lathoniella herceus* were observed by Mr Paul Grimshaw to be abundant at Dingo Swamp, Girraween National Park, and several were also seen near the National Park headquarters. Two vouchers were collected confirming identity of the butterfly. This represents a new record (genus and species) for Queensland. The most northern locality previously for this species was Bald Rock, near Tenterfield, NSW (De Baar 1977).

Many other butterflies finish their northern range close to Stanthorpe and others previously unrecorded in Queensland of temperate origin will undoubtedly be discovered nearby at the higher altitudes.

De Baar, M. 1977. New butterfly records for Queensland and northern New South Wales. Australian Entomological Magazine 4: 11-12.

MOLECULAR PHYLOGENY OF *ACRODIPSAS* (LEPIDOPTERA: LYCAENIDAE)

Rod Eastwood (2002 ESQ Student Award)

Introduction:

The genus *Acrodipsas* Sands is unique to Australia but unlike most butterflies that feed on plants, it is thought that the early stages of all *Acrodipsas* species are parasites of ants' nests, feeding on ant larvae and pupae. This unusual lifestyle, in addition to their rarity, makes them intrinsically interesting for evolutionary and phylogenetic studies. No morphological phylogeny was available for *Acrodipsas* but two recognised species-groups based on leg morphology, and two species-groups based on host-ant association were recognised; however, there was an apparent conflict between the morphological and ecological data (see Fig. 1).

The objectives of my study were to test the monophyly of the genus *Acrodipsas* and to resolve the conflicting morphological and ecological data. In addition, I wanted to infer the role that host-ants and other biological or environmental factors may have played in the evolutionary history of *Acrodipsas*.

Methods:

Acrodipsas species are rarely collected so for most species fresh tissue material was not available. As a result it was necessary to extract DNA from dried specimens up to 30 years old. To do this I developed an extraction and PCR protocol, using only two legs from each specimen. Also, since old DNA is degraded, it was necessary to design primers to target short overlapping fragments of between 170 and 310 bases in the mitochondrial COI and COII genes. Twelve representative taxa were selected to construct the

phylogeny using homologous sequences of 1155 bases across both genes. I used maximum parsimony (MP), maximum likelihood (ML) and a distance measure, but the MP tree was chosen to depict the *Acrodipsas* phylogeny.

Results and discussion:

The MP phylogeny is shown in Fig. 2 with ecological and morphological data overlaid. It suggests that *myrmecophila* and *brisbanensis* are the oldest species and are associated with dolichoderine ants (*Papyrius*). It also suggests that a major host-shift to a myrmicine (*Crematogaster*) occurred in an ancestor of *aurata/cuprea.* This host-shift is unlikely to occur twice more between *cuprea* and *illidgei*, so it is predicted that all other *Acrodipsas* for which associations are currently unknown will be parasites of *Crematogaster* ants.

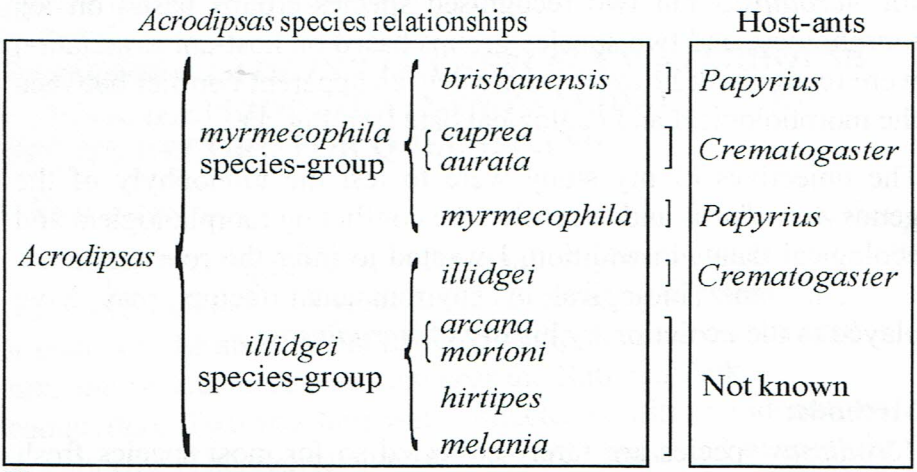
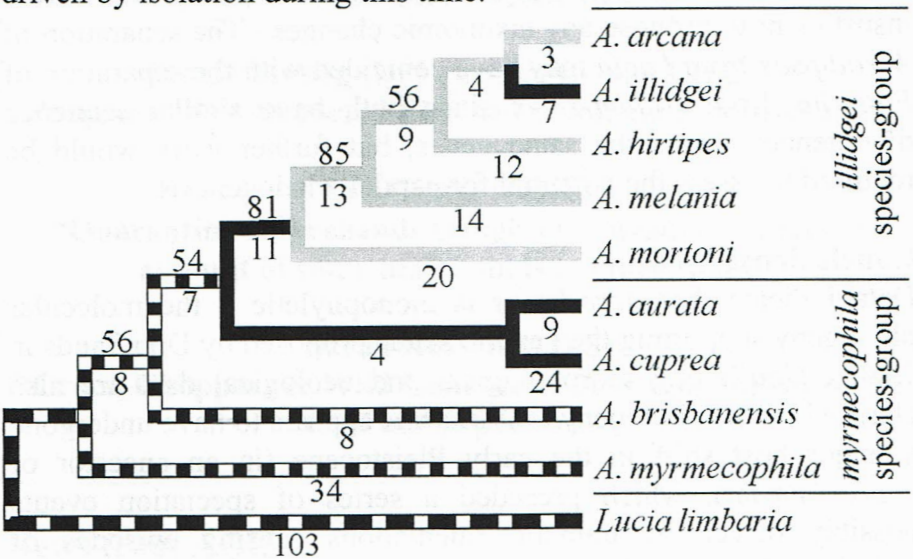


Figure 1 *Acrodipsas* species relationships based on morphological characters with corresponding host-ant data. Brackets group closely related species/groups.

Leg modifications appear to have taken place after the host-ant shift, so apparently they are not related to ant association. Swollen femora and short mid tibiae in the *illidgei* species-group

is a monophyletic derived state. Based on ~2% sequence divergence per million years, the host shift to a myrmicine happened around 2½-3 MYA at the end of the Pliocene. All remaining speciation events appear to have taken place in the Pleistocene during the alternating warm-wet and glacial-dry periods - suggesting that *Acrodipsas* speciation may have been driven by isolation during this time.



Key to host-ants

- Unknown
- Myrmicinae (*Crematogaster*)
- Dolichoderinae (*Papyrius*)
- Dolichoderinae (*Iridomyrmex*)

Figure 2 The *Acrodipsas* phylogeny chosen from eight most parsimonious cladograms estimated for nine *Acrodipsas* species and one outgroup *Lucia limbaria*. Based on concatenated COI-COII 'consensus' sequences comprising 1155 bp (length = 283; 51 informative steps; CI excluding uninformative sites = 0.6087; RI = 0.5161). Bootstrap confidence limits (1000 replicates) are shown above the branches; branch lengths are shown below. Host-ant genera and morphological species-groups are superimposed.

The allopatric *illidgei-arcana* species show little genetic differentiation (½%) but are quite distinct morphologically. Either morphological differences have evolved faster than genetic differences, or the two species are regionally selected phenotypes of a polymorphic species. An excess of 1% sequence divergence among lineages within *A. brisbanensis* and *A. hirtipes* may indicate cryptic species complexes but data from my study were insufficient to propose any taxonomic changes. The separation of *Acrodipsas* from *Lucia* may have coincided with the separation of *Papyrius* from *Iridomyrmex* since both have similar sequence divergences across the same genes, but further work would be required to assess the potential for parallel cladogenesis.

Conclusions:

Data indicate that *Acrodipsas* is monophyletic – the molecular phylogeny supporting the generic status proposed by Don Sands in 1980. Conflicting morphological and ecological data are also clarified by the phylogeny. *Acrodipsas* appears to have undergone a major host shift in the early Pleistocene (in an ancestor of *cuprea/aurata*), which preceded a series of speciation events possibly driven by climatic fluctuations causing episodes of isolation. Leg modifications that characterise the *illidgei* species-group are a monophyletic synapomorphic state, unrelated to ant associate, the purpose of which remains unknown. There is some evidence for speciation along host-ant lines but more detailed life-history data and phylogenetic analysis of host-ants would be necessary to support a cospeciation hypothesis.

Acknowledgements:

Special thanks to my supervisors Jane Hughes and Roger Kitching and others in the Hughes genetics lab! Thanks also to Naomi Pierce, Harvard University and to other institutions and entomologists who provided tissue material for this study.

Notice of next meeting

MONDAY 9th September, 2002
Theme
EXOTIC INSECT INCURSIONS

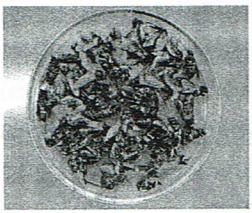
Stuart Mutzig (DPI Fire Ant Control Centre)
"Status of Red Imported Fire Ant eradication in Brisbane"

Bill Crowe (AQIS)
"Quarantine Apprehends Dangerous Invaders - a recent account of some major finds in Queensland"

Sarah Russell (AQIS)
"Crocs, Choppers & Wild Goat Stew - A NAQS Survey of the Gulf of Carpentaria"

News from AQIS

Quarantine inspector Matt Pigram received an early morning surprise while carrying out ULD surveillance at Qantas bond when he found a large number of bees on the outside of plastic wrapping on Malaysian cargo. Fortunately the bees were all either dead or dying (possibly affected by the cold) and Matt was able to secure them by bundling up and bagging the plastic they were on. The bees were identified as *Apis dorsata* – giant honey bee – an exotic species that occurs in Asia and is the host of the parasitic bee mite *Tropilaelaps clareae*. Exotic bees and the parasitic mites they carry are a major threat to the Australian beekeeping industry and pollination services, which have an estimated value of $1 billion per annum. The bees were examined thoroughly under the microscope and found to be free from parasites.



- A *Sea Ranger 65* (20.19 meters) motor yacht, which arrived as breakbulk cargo ex China (load-port Hong Kong), was inspected and found to be heavily infested with termites. A thorough investigation revealed that the infestation was widespread throughout the vessel with damage found in the flybridge, foredeck, engine room, side rails & gates, floors, beds, cupboards, hoodlinings, mouldings, trims of upper & lower decks, etc. A sample of the termites was collected and was identified as a species of *Coptotermes* (suspected to be Formosan termite *C. formosanus*).

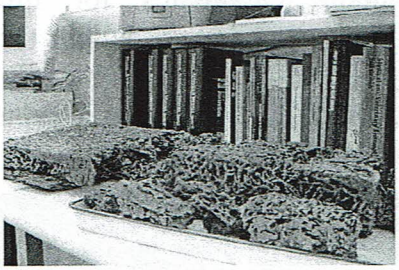
  The extent of the damage as well as the large number of dead alates (winged reproductives) and shed wings (old) found throughout the vessel would suggest that this is a long term infestation, probably several years old. Realising the extent of the infestation, all windows, doors and other access/exit points were sealed up immediately. The yacht was ordered in for a CH_3Br fumigation (48 gms/m^3/24 hrs@21-25°C) will be re-inspected after fumigation to verify the efficacy of the treatment.

  The genus *Coptotermes* contains the largest number of termite pests (28 species) of which *Coptotermes formosanus* is the most widely distributed and economically important and is considered the most destructive subterranean termite in the world. This same species has also been detected infesting vessels in Fremantle on two occasions in recent times.
  Though a subterranean species, *C. formosanus* can successfully

establish a colony with no ground connection making them suitable candidates for infesting yachts. Colonies reach substantial numbers within three to five years and can produce over 70,000 alates. In severe infestations, the termites hollow out the timber, leaving a paper-thin surface which may appear blistered or peeled.

Sea Ranger 65 during inspection & under tarps prior to fumigation

The identification of the sea-faring termites found infesting the Sea Ranger 65 motor yacht was confirmed by Bob Eldridge and Debbie Kent at NSW Forestry. They have advised that they were *Coptotermes formosanus,* considered to be the most widely distributed and economically important subterranean termite in the world. The yacht was thoroughly inspected post fumigation with no sign of live termites found. However, during the re-inspection, the full extent of the infestation was realized. Large nest galleries (one 50cm x 100cm x 10cm in size) with an inordinate ratio of soldiers to workers and immature alates were revealed in areas such as the flooring of the upper deck, the hood linings of the hallway and wall paneling of the crew cabin. The colonies contained such massive numbers of dead termites (approximately 5 kg of termites was retrieved) that specimens were collected using a dustpan and brush! The infestation appears to have been in place for many years involving all timbers of the vessel, from keel to fly bridge, bow to stern



NEWS FROM USDA/CSIRO AUSTRALIAN BIOLOGICAL CONTROL LABORATORY

Jeff Makinson has completed the overseas testing in New Caledonia of the eriophyid mite, *Floracarus perrepae* for the Florida invasive weed, *Lygodium microphyllum*. He was hosted by Jean Chazeau and Herve Jourdan of IRD in Noumea to conduct the studies. Jeff will travel with Tony Wright to Bangkok in October to test the Thai genotype of the mite against the Florida genotype of the plant. Matthew Purcell has just returned from Indonesia where he was surveying for natural enemies of the aquatic weed hydrilla. He surveyed new areas of the plants distribution including the volcanic lakes in central Sumatra and many of the islands across from Singapore. Ryan Zonneveld is beginning night surveys for fern herbivores in areas of high pteridopyhtic diversity on Bribie Island, Carbrook Creek near Logan and the Mt. Cootha Botanical Gardens. Tony Wright and Bradley Brown are developing an artificial diet and rearing method for the Lygodium stem borer. Tony's work in Asia also entails supervision of a field study of the Formosan subterranean termite in the Hong Kong Special Economic Zone. John Goolsby has been selected as the 2002 Timothy L. Mounts Lecturer. He will travel to Peoria, Illinois to in November to give a series of lectures on restoration of the Florida Everglades. ABCL staff will be lecturing at the 2003 Biological Control of Tropical Weeds - Short Course, Brisbane, March 2003.

Nomination for membership of the Entomological Society of Queensland

Title_____ Given name_____

Surname_____

Address_____

_____

_____

email_____@_____

postcode ☐☐☐☐

Nominated by_____

Seconded by_____

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Please contact me on (07) 33102810 or Cas.Vanderwoude@dpi.qld.gov.au to be added to the email distribution list.

Cas Vanderwoude
(Editor)

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Corrections to contact details on back cover

Please note that the following changes to contact details of Society office bearers:

Dr Tim Heard's correct telephone number is (07) 3214 2843

Dr Jenny Beard's correct telephone number is (07) 33657085
e-mail J.Beard@zen.uq.edu.au

Contact details for Dr Bronwen Cribb:
Centre for Microscopy & Microanalysis and
Department of Zoology and Entomology
The University of Queensland, Brisbane
Queensland 4072, Australia
Phone: 3365 7086 Fax: 3365 2199
e-mail: b.cribb@mailbox.uq.edu.au

With the departure of Dr Heather Proctor for Canada, Dr Manon Griffiths has kindly agreed to assist the committee at monthly meetings. Her contact details are:

Queensland Forestry Research Institute
PO Box 631 Indooroopilly 4068
Ph 3896 9355 fax 3896 9567
e-mail: Manon.griffiths@dpi.qld.gov.au

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Printed by: KwikKopy Printing, Suite 4 Toowong Terraces,
31 Sherwood Road, Toowong Qld 4066
Ph: 3870 3411Fax: 3371 7451

OFFICE BEARERS 2002/2003

PRESIDENT
Dr Tim Heard
CSIRO Entomology
120 Meiers Road
INDOOROOPILLY Qld 4068
Ph: (07) 3214 2483
Fax: (07) 3214 2885
Email:
tim.heard@brs.ento.csiro.au

SENIOR VICE-PRESIDENT
Dr Browwyn Cribb
Dept Zoology & Entomology
University of Queensland
ST LUCIA Qld 4072
Ph: (07) 3365 7086; 3365 3025
Fax: (07) 3365 1655
Email:
B.Cribb@mailbox.uq.edu.au

JUNIOR VICE PRESIDENT
Dr Heather Proctor
Aust. School Environ. Studies
Griffith University
NATHAN Qld 4111
Ph: (07) 3875 3844
Fax: (07) 3875 7459
Email:
H.Proctor@mailbox.gu.edu.au

HONORARY SECRETARY
Dr Jenny Beard
Dept of Zoology & Entomology
University of Queensland
ST LUCIA QLD 4072
Ph: (07) 3366 9008
Fax: (07) 3365 1655
Email:
J.Beard@mailbox.uq.edu.au

HONORARY TREASURER
Dr Greg Daglish
Dept of Entomology
Dept of Primary Industries
INDOOROOPILLY Qld 4068
Ph: (07) 3896 9415
Fax: (07) 3896 9446
Email: DaglisG@dpi.qld.gov.au

NEWS BULLETIN EDITOR
Dr Cas Vanderwoude
Fire Ant Control Centre
81A Seventeen Mile Rocks Rd
OXLEY Qld 4075
Ph: (07) 3310 2810
Fax: (07) 3310 2827
Email:
Cas.Vanderwoude@dpi.qld.gov.au

COUNCILLORS

Bill Crowe
Quarantine Entomologist
GPO Box 778
Brisbane, Q. 4001
Ph: (07)3246 8751
Fax: (07) 3246 8661
Email:
Bill.Crowe@aqis.gov.au

Claudina Rodriguez
c/- Qld Museum
PO BOX 3300
SOUTH BRISBANE QLD
Ph: (07) 3720 2941
Fax: (07) 3846 1918

Angela Hatch
c/- Qld Museum
PO BOX 3300
SOUTH BRISBANE QLD
Ph: (07) 3840 7667
Fax: (07) 3846 1918
Email: angelah@qm.qld.gov.au

EDITOR
Aust. Entomologist
Dr David Hancock
PO BOX 537
INDOOROOPILLY Qld 4068
Ph: (07) 4053 4499

BUSINESS MANAGER
Aust. Entomologist
Susan Wright
PO BOX 537
INDOOROOPILLY Qld 4068
Ph: (07) 3840 7704
Fax: (07) 3846 1918
Email: susanw@qm.qld.gov.au

NOTICE OF NEXT MEETING

The next meeting of the Society will be held at **7.00 pm** on Monday 9th September in **Room 388, GODDARD Building, U.Q**. The main business will be: **Stuart Mutzig (fire ants), Bill Crowe (AQIS quarantine intercepts) and Sarah Russell (NAQS survey of the gulf of Carpentaria.** Refreshments will be served before the meeting at 6.30 pm in the tea room on level 2 of the Goddard Bldg.

VISITORS ARE WELCOME