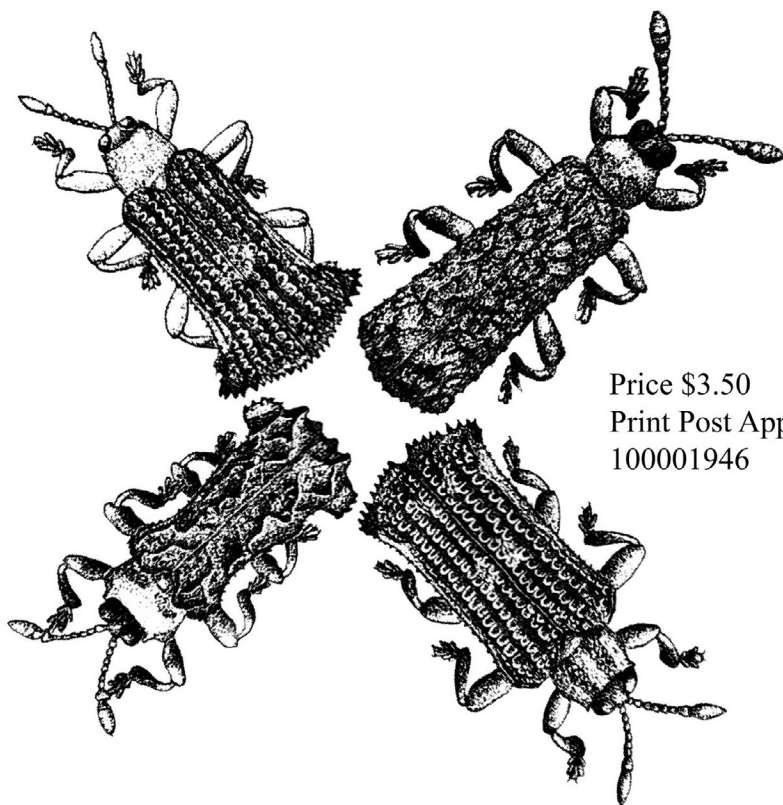


# ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

# NEWS BULLETIN



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Volume 42, Issue 1, March 2014

# THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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**Front Cover Illustration:** Illustrations by Bill Haseler, 1964 President of the Entomological Society of Queensland, of four leaf-mining beetles introduced for the biological control of lantana. The beetles are, clockwise from top right, *Octotoma scabripennis* Guerin-Menville, *Uroplata girardi* Pic, *Octotoma championi* Baly and *Uroplata fulvopustulata* Baly (Coleoptera: Chrysomelidae: Hispinae). All species are now established in Australia.

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# ENTOMOLOGICAL SOCIETY OF QUEENSLAND NEWS BULLETIN 42 (1) March 2014

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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, particularly in Queensland. 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 on the second Tuesday of each month (March to June, August to December). Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society. Membership is open to anyone interested in Entomology.

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, 1885), family Lucanidae (Coleoptera). Its magnificent purple and green colouration makes it one of the most attractive beetle species in Australia. Other common names include Rainbow, Golden and Magnificent Stag Beetle. It is restricted to the rainforests of northern Queensland.

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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 4th edition, 1999". Authors alone are responsible for the views expressed.**

## Minutes for the Annual General Meeting, 11 March 2014

Held in the Seminar Room, Ecosciences Precinct, Boggo Rd, Dutton Park, Tuesday, March 11th at 1:00pm

**Attendance:** Justin Bartlett, Richard Bull, Gary Cochrane, Kathy Ebert, Des Foley, Stephen Frances, Manon Griffiths, Mark Hunting, Judy King, Chris Lambkin, Simon Lawson, Gunter Maywald, Penny Mills, Geoff. Monteith, Helen Nahrung, Brenton Peters, Don Sands, Alisha Steward, Kathy Thomson, Desley Tree, Federica Turco, David Walter, Susan Wright

**Visitors:** Weng Chow, Lisa Rigby

**Apologies:** Julianne Farrell, Steve Hey, Ross Kendall, Morris McKee, Bill Palmer, Noel Starick

**Minutes:** The minutes of the Annual General Meeting 2013 were circulated in *News Bulletin* Vol. 41 Issue 1, March 2013.

*Moved the minutes be accepted as a true record:* Simon Lawson

*Seconded:* Geoff Thompson

*Carried:* Unanimously

### Nominations for membership:

The following nominations for Membership were received and approved by Council and are now presented to the general meeting for approval:

## General

1. Dr. Sakuntala Muthuthantri, Mansfield Q. Nominated by Mark Schutze, Seconded by Stephen Cameron Carried: All

2. Mr. Pierre Tripotin, Cairns, Q. Nominated by Geoff Monteith, seconded by Kathy Ebert, Carried: All

3. Mrs Susan Cully, Beechmont, Q. Nominated by Geoff Monteith, seconded by Kathy Ebert, Carried: All

## Student

4. Mr. Gurion Ang, Morningside, Q. Nominated by Michael Furlong, seconded by Myron Zalucki Carried: All

## General Business:

Annual Reports and Financial Statements

The Society's Annual Reports, Financial Statements and the Independent Auditor's report were published in *News Bulletin* Vol. 41 Issue 10.

President

Treasurer

Business Manager

Secretary

Bulletin Editor

Permit Officer

There were no questions about these reports.

*Geoff Thompson moved the reports be accepted, Chris Lambkin seconded. Carried unanimously.*

## Election of 2014 Council

The following nominations were put to the meeting for election:

<b>President</b>	<b>Bill Palmer</b>
<b>Senior Vice President</b>	<b>Federica Turco</b>
<b>Secretary</b>	<b>Kathy Ebert</b>
<b>Business Manager</b>	<b>Geoff Monteith</b>
<b>Treasurer</b>	<b>Brenton Peters</b>
<b>News Bulletin Editor</b>	<b>Dave Walter</b>
<b>Councillor</b>	<b>Nancy Schellhorn</b>
<b>Councillor</b>	<b>Penny Mills</b>
<b>Councillor</b>	<b>Bradley Brown</b>

As nominations were required to be to the Secretary 6 weeks prior to this meeting and there was only one nominee for each position a secret ballot was not required.

All positions except Junior Vice President were voted on by members by show of hands. Carried unanimously.

In the absence of Bill Palmer, Simon Lawson introduced the incoming Senior Vice President Federica Turco.

## Main Business:

The Presidential Address was presented by our outgoing President, Dr Simon Lawson, speaking on “Australians abroad: eucalypts and their insects.”

**Meeting closed:** 1:55pm

**Next meeting:** 8 April 2014, 1pm

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**Larva of Emperor Moth** *Opodiphthera astrophela* (Walker, 1855) on Queensland Maple (*Flindersia braleyana*), Miva, QLD, 9 March 2103 (Photo DE Walter)



## YOUR NEW ESQ COUNCIL FOR 2014

Inset: Dr Nancy Schellhorn (Councillor). Back row (L to R): Dr Geoff Monteith (Business manager, Australian Entomologist), Penny Mills (Councillor), Dr Federica Turco (Senior Vice-President), Kathy Ebert (Honorary Secretary). Front Row (L to R): Dr Brenton Peters (Honorary Treasurer), Bradley Brown (Councillor), Dr Simon Lawson (Junior Vice-President), Dr David Walter (News Bulletin Editor).

## WANT TO JOIN THE SOCIETY ?

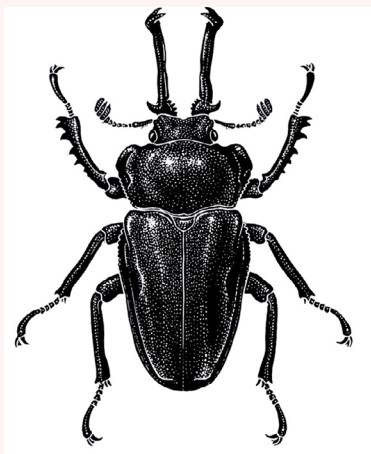
Visit our website at:

<http://www.esq.org.au/>

where you will find nomination forms and full details of fees and addresses.

There are also forms for existing members to use to pay their subscriptions. Coming meetings and excursions are listed.

Procedures for publishing in our journal, *The Australian Entomologist*, are explained with a full **Guide to Authors** plus forms for taking out a subscription to the journal.



## INTRODUCING THE NEW PRESIDENT FOR 2014 - Dr BILL PALMER

I came to entomology in a round about way by starting off in general agriculture at **Gatton College** and **UNE, Armidale** where I did Rural Science. With a bonded cadetship with **NSW Agriculture** (those were the days!), on graduation I went to to work on cattle tick at Wollongbar near Lismore. There I worked on acaricide application and resistance and had my first interactions with CSIRO entomologists such as Harry Wharton and Bob Sutherst in their brand new laboratory at Long Pocket. I then did a PhD at **Texas A&M University** working on the ecology and population modelling of the horn fly. On return to Australia I was posted to the cotton fields of Narrabri where I again worked with a CSIRO team on the computer based pest management system SIRATAC that was designed to minimise pesticide usage.

In 1982, a complete career change occurred when I joined the **Alan Fletcher Research Station** in Brisbane as their entomologist-in-charge of the North American Field Station to work on the biological control of weeds and returned immediately to Texas.

The next twelve years were both enjoyable and productive doing faunistic surveys for potential biocontrol agents for several Queensland weeds (such as groundsel bush, parthenium, lantana and sicklepod) across the southern United States and Mexico and shipping promising insects back to Brisbane. Lots of travel to interesting places, great contacts with American entomologists and minimal admin and red tape!



On return to Australia in 1994, I was professional leader of the **Tropical Weeds Research Station** in Charters Towers before returning to Brisbane. Projects on prickly acacia, mother-of-millions and giant rat's tail grass led to work in Africa. A major issue for the weed biocontrol team has been the move from Alan Fletcher to the new facilities at the Ecosciences Precinct. This caused an interest in quarantine design and biocontrol regulation and protocols. I have also been on working groups for the use of dung beetles and eradication of fire ants.

Although I retired in 2012, I remain very interested, indeed passionate, about entomology and biological control as an honorary research fellow at Ecosciences, an adjunct associate professor at the University of Queensland, and a little private consulting. I am also just starting a term as president of the Asia and Pacific Regional Section of the International Organization for Biological Control. Outside work hours, I enjoy researching family history, distance running, discussing climate change and watching cricket.



## SHED A TEAR FOR THE ALAN FLETCHER RESEARCH STATION



Alan Fletcher Research Station in its heyday ...

One component of the Queensland Government's contentious "asset sales" has been the disposal of the parcels of Brisbane land upon which stood the various government laboratories which closed when their staff moved to their new premises in the Ecosciences Precinct at Dutton Park. Some were prime river frontages. In the September 2013 *News Bulletin* we showed the destruction of the CSIRO Long Pocket laboratories. This time we capture the demise of the **Alan Fletcher Research Station** at Sherwood.

The Station began life in 1921 as the HQ for the **Commonwealth Prickly Pear Board** and it was from this location that the famously successful prickly pear campaign was directed. Following the disbandment of the Prickly Pear Board in 1939, after control of prickly pear had been achieved, the whole station and its staff became the **Biological Section, Queensland Department of Lands**. Its founding, and longest serving, Director (until 1962) was **Alan Parkhurst Dodd**, the central figure in the introduction of *Cactoblastis*. He was also a founder of our Society and President in 1938 and 1945. The Station was renamed after the then Minister of Lands in 1967.

Generations of entomologists toiled there on a myriad of weeds and insects to control them until research activity ceased



... and now it's gone. (Photo G. Monteith)

in May 2010. Recently sold, our picture shows it demolition in March 2014 to make way for a town house development. The view is in through the old entrance gates, with remains of the main building on the left and the footprints of demolished glass houses on the right. The yellow end loader is demolishing buildings on the lower river terrace level.

We'd like it recorded that the man driving the yellow machine stopped work and yelled at our fearless reporters (your Editor and Asst Editor) while they took photographs. Vale AFRS!

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### Our *Liocheles* is now *Hormurus* and has a new family, *Hormuridae*.

Monod L, Prendini L. Evidence for Eurogondwana: The roles of dispersal, extinction and vicariance in the evolution and biogeography of Indo-Pacific Hormuridae (Scorpiones: Scorpionoidea). *Cladistics*. 2014 DOI: 10.1111/cla.12067.

*Hormurus waigiensis* (Gervais, 1843) from near Flinders Peak, QLD (Photo DE Walter)





## NOTICE OF NEXT MEETING

*Tuesday 8th April 2014, 1:00 pm*



Mike Barnett  
Brisbane

### ***Butterfly species and habitats in Africa***

**The lecture:** The illustrated talk will define and discuss the ‘Afro-Tropical region’ which is that part of Africa south of the Sahara. The butterfly diversity of the region will be discussed and compared with that of Australia. Other topics to be dealt with will be habitats, the representation of the families, mimicry and effects of the more extreme seasons, particularly in the far south and north of the African continent. Some treatment of early stages and the flying habitats of the adults will be given and the potential for finding species new to science in Africa will be discussed.

**About the speaker:** Born in London, Mike Barnett immigrated to Australia from Kenya in 1987, bringing a modest butterfly collection with him (with permission of Australian Quarantine). Although it has always been a pan-African collection, with representation from a range of countries in the Afro-Tropical region, he adds to it continually with frequent visits to, or travels through the continent – when opportunity permits. Mike also enjoys a keen interest in the butterfly species here in Australia.

**Venue: Seminar Room  
Ground Floor, Ecosciences Precinct  
Boggo Road, DUTTON PARK. BRISBANE.  
More venue details available at  
<http://www.esq.org.au/events.html>**

# Entomological Society of Queensland 2014

## \$500 Student Award

This is an award by the Society to encourage entomological research. Entries are judged by a panel of three entomologists appointed by the president of the Society. **The winner will be announced at the May 13 General Meeting and is then invited to present a summary of their research at the June 10 Notes and Exhibits meeting of the Society.**

Honours, Diploma and 4th year Degree students who received their qualification from any Queensland tertiary education institution in 2013 or 2014 may submit their entomology-based thesis or report for consideration.

Entrants need not be Society members.

These reports can be directed to the Society's senior Vice-president at the address listed on the entry form. However, please note that a hard copy of your thesis/report does not need to be submitted, and the **submission of a PDF version is encouraged**. This should be emailed together with a signed copy of the completed entry form to:

**Bill Palmer at [bill.palmer@daff.qld.gov.au](mailto:bill.palmer@daff.qld.gov.au)**

Closing date for submissions is Friday 11th April 2014

Visit <http://www.esq.org.au/awards.html>  
for details of how to enter

## UK COCCID WORKER VISITS UNIVERSITY OF QUEENSLAND



**Fig. 1.** Dr Laura Ross, University of Edinburgh.

The Cook Lab at UQ recently played host to Dr Laura Ross (**Fig. 1**) from the University of Edinburgh. Laura completed her PhD at the University of Groningen, (Netherlands) on scale insects, investigating sexual conflict, sex allocation and the different sex system found in the group.

One of the species she focussed on is *Icerya purchasi* Maskell (**Fig. 2**), one of the few species of insects known to be truly hermaphroditic. It is an Australian native appropriately known as the “Cottony Cushion Scale” which became a serious pest in overseas citrus orchards, luckily controlled by introduction of its Australian native predator, the coccinellid, *Rodolia cardinalis* (Mulsant). Although her stay in Australia from mid-January to mid-February was a social visit, she joined members of the Cook Lab on several field trips in SEQ to become familiar with some of the local scale insects.

Laura has received a 2012 UK Natural Environment Research Council Independent Research Fellowship for five years for a project entitled ***Evolutionary Dynamics of Genetic Conflict: the Origin, Maintenance and Loss of Paternal Genome Elimination.***

Laura is hoping to visit again and investigate the sex systems of some of Australia’s scale insects, particularly species of Eriococcidae (felt scales).. We look forward to seeing her again in the near future, and perhaps she’ll find more fatherless scale insects here.



**Fig. 2.** Mother *Icerya purchasi* surrounded by several nymphs (crawlers) (Photo: P. Hollinger).



**Male Ground Pearl** (Margarodidae) (ex Alberta, Can.). In Australia, the sugarcane pest *Eumargarodes laingi* Jakubski is known only from females. (Photo DE Walter)

## **Presidential Address 2014: Simon Lawson, DAFF, Brisbane** ***Australians Abroad: Eucalypts and their Insects***

### **Eucalypt Forests**

Eucalypts are ingrained into the Australian psyche. They dominate the Australian continent and its landscapes like almost no other single type of tree does anywhere else in the world. To illustrate the point, Australia's forested area (including woodlands) is estimated to cover about 164 million hectares, of which 116 M ha are classified as eucalypt forest, or about 70% of the total forested area. The term 'eucalypt' is now broadly used to refer to three genera, *Eucalyptus*, *Corymbia* and *Angophora*, and there are about 800 species named within these genera. Almost all these species are endemic to Australia, with only four species occurring outside. These are: *Eucalyptus deglupta*, which occurs in Papua New Guinea, Indonesia and the Philippines; and three other species, *E. urophylla*, *E. orophylla* and *E. wetarensis* in Timor and the Sunda Islands. Interestingly, one of these overseas eucalypts, *E. urophylla*, is now one of the most widely-planted species in the world when hybridised with flooded gum, *E. grandis* (so-called 'Urograndis').

The range of climatic and environmental conditions that eucalypt species grow under is fantastically wide, from the arid zones to the margins of rainforests and just about all in-between, including in the seasonally snow-covered Australian Alps. This wide-ranging adaptability is one of the features of the group that has made them such a popular tree around the world, particularly

in plantation forestry where this sort of plasticity across sites is highly valued.

### **Evolution of the Eucalypt**

Given their dominance across Australian landscapes it is not surprising that eucalypts have a very long association with this landmass. The oldest pollen fossils in Australia that can be identified as distinctively 'eucalypt' date back to the late Palaeocene, or about 54 million years ago (MYA), while the oldest macrofossils date to 21 MYA, with others dated to the mid-Miocene (11.6 - 16 MYA). However, the oldest eucalypt macrofossils are not found in Australia, but in Patagonia in South America, illustrating its deep Gondwanan connections. Interestingly, the trees are now widespread across that continent again, either in plantations or in the landscape as amenity plantings.

### **Human Encounters**

The first human encounters with eucalypts date to about 50,000 years ago with the arrival in Australia by indigenous peoples. It is well known that, in addition to a general drying trend that saw the retreat of rainforests, land management practices by indigenous Australians such as the use of fire also promoted expansion of the fire-tolerant eucalypts at the expense of rainforest species. Indigenous Australians utilised eucalypts for a number of purposes, including for medicines, bowls and dishes and other utensils, canoes (bark), spear-throwers, boomerangs and shields, didgeridoos & percussion sticks, materials for shelters, gum as resin glue, and in ceremonies, etc.



The first European encounters with eucalypts date back to the early Dutch and Portuguese contacts with the West Coast, but it took until Cook's 1770 voyage, and with the botanist Joseph Banks on board, for a scientific interest to be taken in these trees. The first species that Banks collected appears to have been *Eucalyptus gummifera* from Botany Bay. Banks brought back many specimens from this voyage, but it took until 1789 for the genus to be officially described by L'Héritier. Although eucalypts are now well known for the quality and durability of their wood, some early English colonisers were not so enamoured of the trees. This quote from an early engineer writing home illustrates the point: "Even the trees are worthless, for not only after they fall, but even whilst standing they are turned into sand" (*Year Book of Australia* 1917). Aside from the solid eucalypt timber used for various purposes, the

chances are now that most paper you use is composed of eucalypt-derived fibre. Eucalyptus oils for medicinal use were used for millennia by indigenous Australians, but were first explored by Europeans in 1788, with Bosisto's commercialising the process in 1852. You can still buy that brand off the shelf in supermarkets today, though the oil may no longer be extracted in Australia!

### Historic Eucalypts

Eucalypts feature at several historic sites in Australia. For example, in quite a few locations there remain old trees that still bear the scars of bark removal by indigenous Australians for canoe making. Two significant historic trees in Queensland include the heritage-listed Burke and Wills 'dig' tree (*Eucalyptus coolabah*) on the banks of Bullah Bullah Waterhole on Cooper Creek, and the now sadly deceased 'Tree of

Knowledge' at Barcaldine (*Corymbia aparrerinja*) that marked the spot of the formation of the Australian Labor Party in 1891. A museum and in it the preserved trunk are all that remains of the tree at Barcaldine, although several clones were produced from the tree before its demise and are located at Barcaldine and other places including at the Ecosciences Precinct in Brisbane. A tree I was familiar with growing up in South Australia was the Herbig tree (**Fig. 1**) in the Barossa Valley that was used as accommodation by the Herbig family for about 2 years from 1858-1860, and where two of their children were born. There are many others historic trees, including the Gloucester tree (*Eucalyptus diversicolor*) at Pemberton, W.A. that stands at 72 m tall and which served as a fire tower and is now climbable by tourists. Australia's tallest living eucalypt is 'Centurion', a *Eucalyptus regnans* tree in Tasmania that stands at 99.8 metres, the world's tallest flowering plant.

### Eucalypts in Art

The first European colonisers found it very difficult to get to terms with just how different the Australian environment was from 'back home'. Notoriously this led to the formation of Naturalisation Societies intent on making the Australian fauna and flora more like the English countryside that was familiar to them. Fortunately many of their crazier introductions failed, but we are still left with rabbits, foxes et al. as a legacy of those times. This inability to adjust to this vastly different landscape (and the light) also showed in the way early artists portrayed the land, and in



**Fig. 1** Herbig Tree (*Eucalyptus camaldulensis*), South Australia

particular the eucalypts. Eucalypts in these early paintings bear absolutely no resemblance to the trees we know and love. It took until the 1850's before landscape artists like John Glover and Eugene von Guérard began to portray the form of the trees more realistically and with a better appreciation of the Australian light. Later, artists in the Heidelberg school, including Frederick McCubbin, Hans Heysen and Albert Namatjira really began to capture the true appearance and beauty of the eucalypt and how it fitted into the landscape.

### Iconic Fauna

The iconic animal associated with the eucalypt in the eyes of Australians and of most people overseas is the Koala,





*View of Tower Hill* (1855) in southwest Victoria by Eugene von Guérard (17 November 1811–17 April 1901) an Austrian artist who painted in Australia from 1852 until 1882.



*Gum Trees & Cattle*. Sir Hans Heysen, OBE (8 October 1877–2 July 1968) a German-born Australian artist.

which of course is nearly monophagous, feeding exclusively on the leaves of only a select few of the 800 plus eucalypt species. There are a couple of other mammals which can subsist on eucalypt leaves, such as the Greater Glider and Ringtail Possum, but the greatest preponderance of herbivores that feed on eucalypts are, of course, insects (they also have the additional advantage of having six legs, which in the view of we entomologists is obviously the optimum number!).

It is difficult to estimate the numbers of insects obligately associated with eucalypts, but given the dominance of this tree in the environment the proportion of the total number of endemic insects in Australia that are associated with eucalypts must be quite high. A search of the Atlas of Living Australia (<http://www.ala.org.au>) for insect specimens in museums associated with various eucalypt forest types delivers 239,821 results for non-aquatic insects, with (unsurprisingly) the two most common orders represented being the Coleoptera and the Lepidoptera. Some of the best known and most diverse insect groups associated with eucalypts include the chrysomelid beetles, lerps, phasmatids, sawflies, various gallers (including the diverse and quite bizarre apiomorphs), scarab beetles, termites, cup moths, emperor gum moths, weevils, cossid and ghost moths, longicorn beetles, and the list goes on with most terrestrial orders being represented. Insects underpin the food chain for much of the vertebrate life in eucalypt forests, while termites provide refuges and nesting sites for many others by hollowing out tree

trunks and branches (and are probably also the cause of the eucalypt habit of randomly dropping branches on unsuspecting bystanders!).

Despite (or perhaps because of) the diversity of insect herbivores in native eucalypt forests, wide-scale, regular or cyclic outbreaks of defoliators or tree-killers are rare in Australian forests compared to many other parts of the world. Some insects that have been recorded in outbreaks that defoliate large areas of native forest include three species of phasmatids, the Gum Leaf Skeletoniser, the Jarrah Leafminer, and lerps, the latter often associated with forest understorey structures that favour the Bell Miner birds that actively exclude more effective bird predators of lerps. The Australian eucalypt forest insect fauna has no equivalent to the tree-killing scolytid bark beetles of North America and Europe that can cause mortality to millions of hectares of forests. In agricultural land, insects are clearly implicated in the decline of remnant eucalypt trees in rural landscapes. In eucalypt plantations in Australia there are a number of insects that outbreak and require management, including chrysomelid leaf beetles, weevils, autumn gum moth, lerps, spring beetles and others.

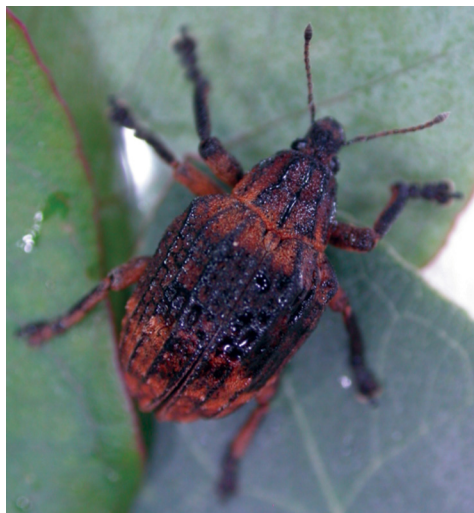
### **The spread of the Eucalypt**

Once the desirable properties of eucalypts became well-known it wasn't long before they began to be distributed around the world. The botanist Baron Ferdinand Von Mueller and others actively promoted their properties and began to send seed around the world for

cultivation. The first bulk seeds were exported to California in 1849, and now eucalypts are a dominant part of the landscape in that part of the world, with more than 90 spp established there. In 2012 it was estimated that there are more than 20 M ha of eucalypts in plantations worldwide, including about 4 M ha in Brazil in large industrial plantations. Many of these plantations supply the world's pulp for paper production, timber for various uses, charcoal as an alternative to coal in some industrial factories, and for extractives such as eucalyptus oil. Outside of plantations it is also an important landscape and amenity tree in many parts of the world and an important source of firewood in developing countries. Eucalypts are not universally liked or appreciated, however, with them being regarded as a serious invasive weed in some parts of the world, as well as being implicated occasionally in lowering water tables.

## Eucalypt insects moving overseas

As with the growing of most exotic tree species, eucalypts had a short honeymoon period before their associated insects began to catch up with them. The first record of movement of a eucalypt specialist overseas was in 1873 with the Eucalypt Longicorn Beetle *Phoracantha semipunctata* being recorded in New Zealand. There are now approximately 80 Australian species that are known to feed on eucalypts that have moved overseas, including about 40 eucalypt specialist feeders. These occur in all continents where eucalypts are grown and include 15 species in North America, 8 species in South America, 11 species in Europe and the Mediterranean, 7 in Africa, 3 in Asia and 25 in New Zealand (Asia is apparently underrepresented while New Zealand, presumably due to its proximity to the source country, is overrepresented).



**Fig. 2** Eucalyptus snout beetle, *Gonipteris* sp. (Image: Helen Nahrung)



**Fig. 3** Red Gum Lerp Psyllid, *Glycaspis brimblecombei* (Image: Carlos Wilcken)

Two examples of early moving pests and their management are:

### 1. **Eucalypt Snout Beetle** (*Gonipterus scutellatus*) (**Fig. 2**)

This beetle was first found in New Zealand in 1890, then to South Africa in 1916, South America in 1926, Europe/Middle East in 1979, and North America in 1994. Biological control was initiated in 1926 with the release of the egg parasitoid *Anaphes nitens* in South Africa in 1926. It initially was very successful in controlling the beetle's populations and has since been moved around the world to combat other introductions of *G. scutellatus*.

### 2. **Eucalyptus Longhorn Beetle** (*Phoracantha semipunctata*)

The first movement of this pest was to New Zealand in 1873, then to South Africa in 1906, South America in 1910, Europe/Middle East in 1940 and North America in 1984. Up to 1984 it was managed mostly by silvicultural means aimed at reducing tree stress and hence susceptibility to beetle attack (in Australia *P. semipunctata* usually only attacks dead, dying or moribund trees). Biological control was initiated in California in 1993 with the release of the egg parasitoid *Avetianella longoi*. Another longicorn beetle, *P. recurva*, was introduced into California in 1995, and began competitively replacing *P. semipunctata*, partially mediated by *P. recurva* eggs being able to resist parasitisation by *A. longoi*.

### **Recent Trends**

Up until the late 1990's the accumulation curve of first movements of

Australian eucalypt insects overseas showed a consistent linear increase, indicating a fairly constant rate of overseas movement. However, since then, there has been a sharp upswing in the rate of first movements of eucalypt insects and this coincides with a similar rapid increase in international trade. To some extent it seems that the pathways by which these insects have moved has changed over time, with early movements associated with solid timber and seeds, while some of the more recent movements are likely associated with the 'plants for planting' and cut flower trades. This rapid increase in introductions is of major concern to the eucalypt growing industries around the world.

### **The Big Five**

Currently five Australian-origin eucalypt pests are of most concern to the global eucalypt plantation industry. These are: *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae, **Fig. 4**); *Leptocybe invasa* (Hymenoptera: Eulophidae); *Glycaspis brimblecombei* (Hemiptera: Psyllidae, **Fig. 3**); *Ophelimus maskelli* (Hymenoptera: Eulophidae, **Fig. 5**); and *Gonipterus* spp. complex. Three of these began their range expansions in the 2000's, and one, *L. invasa*, made its way to every continent that grows eucalypts within a decade. Only one species (*Gonipterus* complex) is a pest of plantations in Australia, but in this case is also a (human-assisted) range expansion from the eastern States to the southwest of Western Australia. The Bronzing Bug, *T. peregrinus*, is a pest of street trees in Sydney, which is the likely source for the overseas introductions.





**Fig. 4** The Bronzing Bug, *Thaumastocoris peregrinus* (Image: Carlos Wilcken)

### Challenges for Biocontrol

Classical biological control is considered to be one of the main options that can be deployed to manage introductions of exotic pests and has been successfully applied in many, many cases. Selecting for resistance and deployment of resistant germplasm is another long-term management strategy that has been used by the forest industry, particularly against tree pathogens. One of the challenges of the rapid increase in exotic insect introductions is that forest companies can invest heavily in developing resistant germplasm to one pest or disease only for it to become redundant when another pest is

introduced that is not affected by the same resistance mechanisms. Classical biological control is therefore still a major, relatively low-cost, effective and long-lasting weapon in the fight against these Australian invaders. There is therefore a great deal of interest in and demand by the international industry for effective biological control agents against the ‘big five’. The research needed to underpin this demand falls into three categories: (1) Discovery - Discovery in Australia of new agents is required for pests that do not have known, effective biocontrol agents. (2) Application - Better application and distribution is required for pests with

known, but not yet established or industry-evaluated biocontrol agents. (3) Fine-tuning - Fine-tuning options required for pests that have established biocontrol agents, but which do not work effectively in all regions. These three theme areas can be used to categorise future biocontrol R&D needs for the 'big five pests'.

**Discovery:** *Thaumastocoris peregrinus*  
Currently only one biological control agent is known, a mymarid egg parasitoid *Cleruchoidea noackae*. The effectiveness of this wasp in controlling *T. peregrinus* is still unknown in plantations. It has now been released in Chile, Brazil, Uruguay & South Africa, and early data suggests field parasitism of about 30%. However, it is unlikely that this level of parasitism is sufficient for effective control (the parasitoid is present in Sydney where the pest frequently outbreaks), so other agents may be required. Surveys are thus required of populations of the *T. peregrinus* haplotypes in Australia that match those of the overseas populations in order to discover potential new biocontrol agents and/or new biotypes of *C. noackae* that may be more effective parasitoids.

**Application/Discovery:** *Leptocybe invasa*

This gall wasp was first recorded in Israel in 2000 and had not previously been described in Australia. Four parasitoids were released in Israel following extensive Australian surveys in 2003 and have achieved good levels of control. These were: *Selitrichodes kryceri* (Eulophidae), *Quadrastichus mendeli*

(Eulophidae), *Megastigmus zvimendeli* (Torymidae), *M. lawsoni* (Torymidae). Another new parasitoid, *Selitrichodes neseri*, has now been released in South Africa and seems to have great potential. *Quadrastichus mendeli* was re-distributed from Israel into India in 2010 and has also recently been tentatively confirmed from Laos. There are thus a range of effective parasitoids available and the main need for this pest is for application of these to biocontrol in developing countries. There may also be a need for discovery of additional biocontrol agents or better climate-matched biotypes of the known parasitoids

**Fine-tuning/Discovery:** *Glycaspis brimblecombei*

The Red Gum Lerp Psyllid was first found in California in 1998, and spread to South America by 2002, Europe by 2007, and South Africa in 2012. An encyrtid parasitoid, *Psyllaephagus bliteus*, was released in California 2000-2002 to control this pest and has achieved good control there and has since moved with *G. brimblecombei* as it has spread globally. However, control by this parasitoid has now broken down in some regions. Original collections of *P. bliteus* were collected from southern/Mediterranean climatic regions in Australia and so there is now a need for better matched biotypes of *P. bliteus* for subtropical and tropical regions, or potentially even new agents from these regions.

**Fine-tuning:** *Gonipterus* species complex.



*Gonipterus scutellatus* was thought to be a single species until recently, but is now known to consist of a complex of at least 8 species. Mismatches of the *Anaphes nitens* mymarid egg parasitoid (overseas populations are thought to be derived from a single region in Australia) are now thought to be causing poor biological control in many regions of the world and here in south-western Western Australia. Collection of egg parasitoids matched to the appropriate *Gonipterus* sp. in the complex is now required for many parts of the world. Projects to address these needs: Australia obviously has a unique role to play in meeting the biocontrol R&D needs of the world for these and future pests. Researchers at the University of the Sunshine Coast (USC) and the Queensland Department of Agriculture, Fisheries and Forestry have been actively engaging with the international industry and have developed two projects which are about to start and that will begin to address some of the R&D needs outlined above. These are:

An Australian Centre for International Agricultural Research (ACIAR) Project “Biological control of galling insect pests of eucalypt plantations in the Mekong Region”. The project is funded to \$1.3 M over four years, is lead by the University of Sunshine Coast, with partners in Q-DAFF, the National Agriculture and Forest Research Institute of the Lao PDR, the Forestry Administration of Cambodia, the Vietnam Academy of Forest Science and the Thailand Royal Forests Department.

An industry partnership, the BiCEP (Biological Control of Eucalypt Pests) Industry Alliance has also just commenced, again lead by USC with Q-DAFF collaboration, and with industry funding from Brazil (IPEF - Forestry Science and Research Institute) and South Africa (Forestry South Africa/ University of Pretoria). The early focus of this R&D will likely be on *T. peregrinus* and *G. brimblecombei*.



**Fig. 5** Eucalyptus Gall Wasp *Ophelimus maskelli* galls on eucalypt leaf. (Image: Zvi Mendel)

## Meetings & Conferences

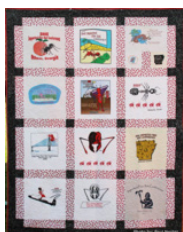


### **Understanding biodiversity dynamics using diverse data sources**

April 22–24 2014

CSIRO Discovery & Australian National University, Canberra, AUSTRALIA

<http://cba.anu.edu.au/news-events/understanding-biodiversity-dynamics-using-diverse-data-sources>



### **Annual Imported Fire Ant (and other Invasive Ants) Conference**

May 5–8 2014

Hyatt Palm Springs Hotel, Palm Springs, California, USA

<http://www.extension.org/pages/19257/imported-fire-ant-and-invasive-pest-ant-conference#.U0muT-Syqm>



### **Insects to Feed the World Conference**

May 14–17 2014

Hotel Reehorst, Wageningen, THE NETHERLANDS

<http://www.wageningenur.nl/en/show/Insects-to-feed-the-world.htm>



### **8th Annual Arthropod Genomics Symposium (AGS)**

June 12–14 2014

University of Illinois, Urbana-Champaign, USA

<http://conferences.igb.illinois.edu/arthropod/>



### **Evolution 2014**

June 20–24 2014

Raleigh Convention Centre, North Carolina, USA

<http://evolution2014.org/>



### **30th International Society of Chemical Ecology (ISCE) meeting**

(jointly with Chemical Signals in Vertebrates, CSiV)

July 8–12 2014

University of Illinois, Urbana-Champaign, USA <http://www.chemecol.org/annualmeeting.shtml>



### **Seventh International Symposium on Molecular Insect Science**

July 13–16 2014

NH Grand Krasnapolsky, Amsterdam, THE NETHERLANDS

<http://www.molecularinsectscience.com/>

## DIARY DATES FOR 2014/2015

*Nine general meetings held per year on the 2nd Tuesday of the respective month*

MAR 2014-Tuesday 11th	Dr Simon Lawson AGM and Presidential Address “Australians abroad: eucalypts and their insects”
APR 2014-Tuesday 8th	Mike Barnett “Butterfly species and habitats in Africa”
MAY 2014-Tuesday 13th	
JUN 2014-Tuesday 10th	Student Award Presentation/ Notes and Exhibits
AUG 2014-Tuesday 12th	
SEP 2014-Tuesday 9th	
OCT 2014-Tuesday 14th	
NOV 2014-Tuesday 11th	
DEC 2014-Tuesday 9th	Xmas BBQ/ Notes and Exhibits
MAR 2015-Tuesday 9th	Dr Bill Palmer AGM and Presidential Address

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**STUDENT:** Students and others at discretion of the Society Council **\$18p**  
Student membership conveys full membership privileges at a reduced rate.

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**NOTICE OF NEXT MEETING**

*Tuesday 8th April 2014, 1:00 pm*

**Mike Barnett**

Brisbane

***Butterfly species and habitats in Africa***

**Venue:** Seminar Room

Ground Floor, Ecosciences Precinct

Boggo Road, DUTTON PARK. BRISBANE.

More venue details available at

<http://www.esq.org.au/events.html>

**ALL WELCOME**

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**NEXT NEWS BULLETIN**

Volume 42, Issue 2 (April 2014)

**CONTRIBUTIONS WELCOME**

**DEADLINE - Tuesday 16 April 2014**

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