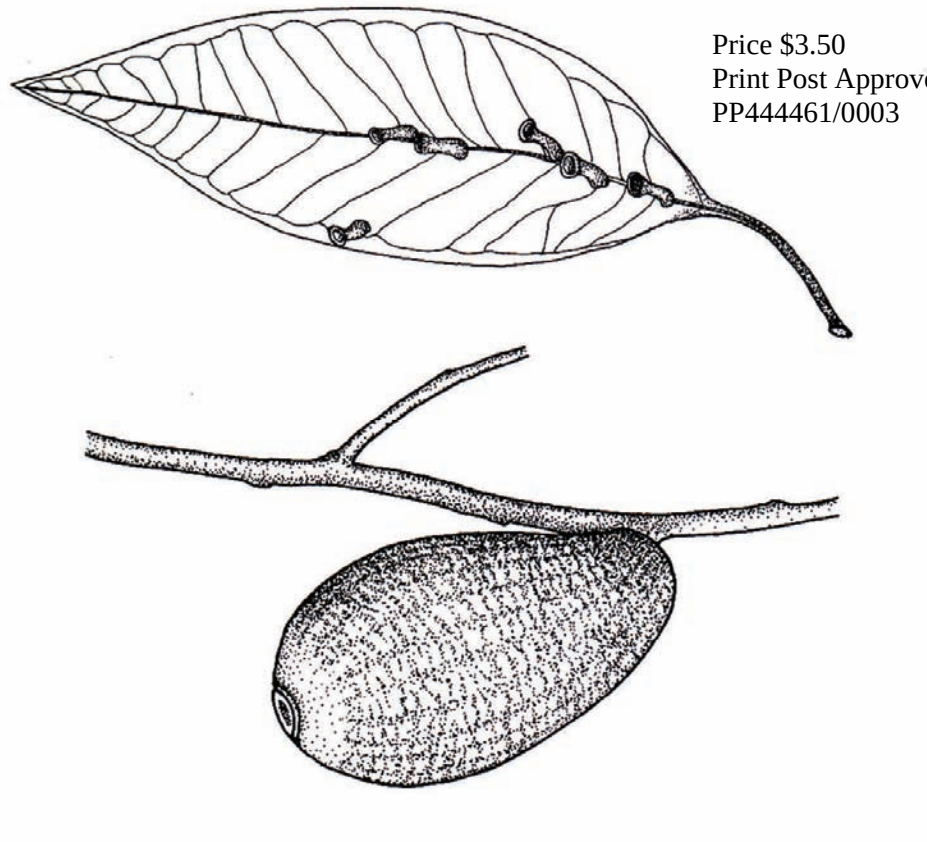
ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN



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THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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Front cover illustration: Galls induced by the scale insect *Apiomorpha conica* (Eriococcidae) on *Eucalyptus obliqua*. Top: tubular galls on leaves induced by males. Bottom: gall induced by female on stem. Original drawing by Penny Gullen.

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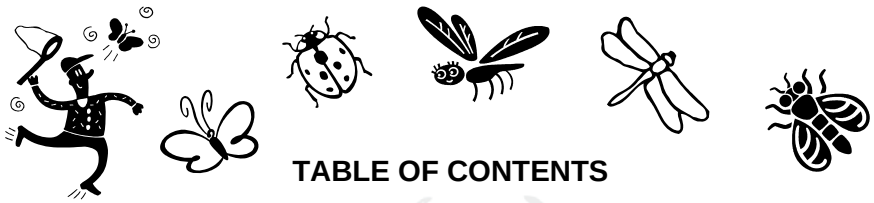

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The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists 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 Monday of each month (March to June, August to December), or on Tuesday if Monday is a public holiday. 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), family Lucanidae (Coleoptera). Its magnificent purple and green colouration makes it one of the most attractive beetle species in Australia. It is restricted to the rainforests of northern Queensland.

Minutes of General Meeting

Held in the Ground Floor Conference Room, Ecosciences Precinct, Boggo Rd, Dutton Park, on March 14, 2011.

Chair: Matt Purcell

Attendance: Justin Bartlett, Bradley Brown, Lyn Cook, Tim Heard, David Holdom, Lynita Howie, Judy King, Chris Lambkin, Simon Lawson, Gunter Maywald , Penny Mills, Mike Muller, Helen Nahrung, Don Sands, Alisha Steward, Geoff Thompson, Desley Tree.

Visitors: Gary Fitt, Mark Hunting, Cassie Jansen, Morris McKee, S. Raghu, Martin Shivas.

Apologies: Richard Bull, Geoff Monteith, Federica Turco.

Minutes: The minutes of the last Annual General Meeting were circulated in News Bulletin Vol. 38, Issue 1, March 2010.
Moved the minutes be accepted as a true record: Don Sands
Seconded: Geoff Thompson

Business arising
None.

Nominations for Society Membership:
The following nominations for membership were received and approved by Council, and were put forward for election:

General Membership:
Mr Charles Dewhurst, West New Britain, PNG. Nominated David Rentz, seconded Geoff Monteith
Dr Nate Hardy, Albuquerque, New Mexico, USA. Nominated by Christine Lambkin, seconded by Desley Tree.
Mr Steven Law, North Melbourne, Victoria. Nominated Judy King, seconded Geoff Thompson
Dr Kevin Lambkin, Bardon, Queensland. Nominated by Trevor Lambkin, seconded by Christine Lambkin.
Dr Simon Lawson, Kenmore Queensland. Nominated by Judy King, seconded by Helen Nahrung.
Mr Graeme Smith, Naraweena, NSW. Nominated Matt Purcell, seconded Christine Lambkin.

Student Membership:
Ms Kristy Byers, Frenchville, Queensland. Nominated by Christine Lambkin, seconded by Justin Bartlett.
Ms Lacey Mack, Wurtulla Queensland. Nominated Lyn Cook, seconded Penny Mills.
Mr Ryan Norris, Gladstone, Queensland. Nominated Lyn Cook, seconded Desley Tree
Ms Kelli O'Neill, Kedron, Queensland. Nominated Desley Tree, seconded Justin Bartlett.

They were elected unanimously.

General Business:
1. The President reminded members of the untimely death of Murdoch DeBaar, and thanked Ross Wylie for writing Murdoch's obituary.
2. The President also reported the death of another long term member, Dr Dora Margaret Spencer, in Canberra on January 6th, 2011.
3. The President reminded members that Annual Reports, financial statements and the Independent Auditors report for 2010 were published in News Bulletin Vol.38, joint issue 9&10. There were no questions about the information provided in the reports.
Moved Geoff Thompson, seconded Christine Lambkin, that the Annual reports and financial statements be accepted.
Carried unanimously.

Election of the President and Council for 2011
The following nominations were received by Council, and were published in the last News Bulletin. There was only one nomination for each position therefore a secret ballot was not required.

President	Lyn Cook
Senior Vice President	Geoff Thomspon
Secretary	Judy King
Business Manager	Geoff Monteith
Treasurer	Desley Tree
News Bulletin Editor	Justin Bartlett
Councillor	Simon Lawson
Councillor	Chris Moeseneder
Councillor	Federica Turco

All nominees were elected unanimously by show of hands.
The position of Junior Vice President, to be held by Matt Purcell, is not an elected position.

The retiring President, Matt Purcell, thanked outgoing Councillors Richard Bull and Christine Lambkin for their significant contributions to the Council and to the Society over several years. Christine has done a terrific job as Councillor and Permits Officer, and she will continue as Permits Officer. Matt then introduced the incoming President, Dr Lyn Cook.

The new President thanked Matt and invited him to deliver his Presidential address - 'Unwanted Australians: exploration for biological control agents of Australian plants which are serious weeds in the United States'.

Vote of thanks to the retiring President: Christine Lambkin.

Any Other Business
Christine Lambkin informed the members that the University of Queensland Insect Collection is being moved to the Queensland Museum. New compactus storage is being installed in the Museum. There will be no access to the Museum Collection from 15 April to 18 May, and this will probably be extended to several months. There will be an announcement in the News Bulletin.

Main Business

Presidential Address:

Unwanted Australians: exploration for biological control agents of Australian plants which are serious weeds in the United States

Matthew Purcell,
CSIRO Ecosystem Sciences, USDA-ARS, Australian Biological Control Laboratory.

The United States Department of Agriculture, Agricultural Research Service, Australian Biological Control Laboratory (ABCL) was established in Australia in the mid-1980s under the leadership of Joe Balciunas. There was a main laboratory established initially at the CSIRO Davies Laboratory in Townsville (later at James Cook University) and a satellite laboratory at the CSIRO Long Pocket Laboratories in Brisbane (now at CSIRO Ecosystem Sciences, Ecosciences Precinct, Dutton Park). In 1996, the labs were consolidated into one location in Brisbane where this facility is administered through a specific cooperative agreement between the CSIRO and the USDA-ARS.

The USDA-ARS has three other overseas biological control laboratories; the South American Biological Control Laboratory in Buenos Aires, Argentina, the Sino-American Biological Control Laboratory in Beijing, China and the European Biological Control Laboratory in Montpellier, France. Their mission is to conduct research projects to search for, identify, evaluate and prioritize potential biological control agents for use against invasive species, with an emphasis on species that are invasive to United States. The evaluation process

Figure 1 (above). Demographic surveys of *Melaleuca quinquenervia* where designed to determine the weak link in the plants life cycle for prioritising biological control agents for further evaluation.

Figure 2 (right). The broad-leaved paperbark tree, *Melaleuca quinquenervia*.

includes insect biology and life history studies, host range testing, seasonality surveys, impact assessments and comparative ecological and demographic surveys of the hosts. Demographic surveys (Fig. 1) are usually conducted to determine the weak link in the target's life cycle which could be manipulated through attack by biological control agents to inflict maximum damage.

Most of the research conducted in Australia has been in collaboration with the USDA-ARS Invasive Plant Research Laboratory in Fort Lauderdale, Florida. Several Australian plants have become serious weeds in Florida, particularly the broad-leaved paperbark tree, *Melaleuca quinquenervia*, the climbing fern, *Lygodium microphyllum*, the coastal, swamp and river she oaks, *Casuarina equisetifolia*, *C. glauca* and *C. cunninghamiana* respectively, and the submerged aquatic plant hydrilla, *Hydrilla verticillata*. ABCL also conducts exploration in Asia utilizing an extensive range of collaborators throughout the region. Using collaborators is more effective in conducting in-depth research throughout the year which is preferable to "snatch and grab" surveys where short term exploration and evaluation is conducted over short visits. Other targets found in Asia include downy rose myrtle, *Rhodomyrtus tomentosa*, skunk vine, *Paederia foetida*, Chinese tallow, *Triadica sebiferum*, and the Asian Citrus Psyllid, *Diaphorina citri*.

Melaleuca quinquenervia (Fig. 2) is native to the east coast of Australia in swamps, around lakes and along river systems. This paperbark tree, which grows to 20m in height, was introduced into Florida in the early 1900s and in the last 30-40 years has greatly expanded its range; at its peak over 600, 000 hectares were infested. It invaded natural wetland areas causing extensive environmental and economic damage and importantly it threatened the world renowned Everglades National Park. Fires frequently burnt through the extensive monocultures of *M. quinquenervia* in south Florida as the high oil content of the leaves was very combustible. One fire alone cut off the electricity supply to Miami with economic losses estimated at one billion dollars. Mechanical control was extremely limited given its inaccessible wetland habitat. Seed capsules are serotinous capsules meaning that seeds are held within these capsules and only released after events such as fire or herbicidal control. After such an event, thousands of seeds are released and germinate beneath and around parent trees forming dense, impenetrable stands.

As part of the management plan for *M. quinquenervia*, existing stands were to be removed by mechanical and herbicidal control where possible while regeneration was to be addressed by the release of biological control agents. In surveys conducted by ABCL in Australia, over 450 insect species were found attacking *M. quinquenervia* and its close broad-leaved relatives in Australia. Two insects were initially tested in Australia and subsequently released in Florida following quarantine evaluation. The weevil *Oxyops vitiosa* (Fig. 3) was released in 1997; adults attacked the young growth and flower and leaf buds while larvae fed on flushing leaves. A sap-sucking psyllid, *Boreioglycaspis melaleucae* (Fig. 4), was released in 2002; it attacked young foliage and seedlings. The weevils drastically reduced floral intensity and tree height while the psyllids reduced seed production and increased seedling mortality. The combined effects of both agents have drastically reduced seed production (by 98%), stand densities (>85%), seedling survival (>60%), tree height, canopy cover (increasing light penetration and biodiversity) and stump regrowth.

Figure 3. The weevil *Oxyops vitiosa* feeds on the young leaves and buds of *Melaleuca quinquenervia* and was released in Florida as a biological control agent in 1997.

Figure 4. The nymphs of the psyllid *Boreioglycaspis melaleucae* feed on the young foliage of *Melaleuca quinquenervia* and reduce seed production and increase seedling mortality.

It was subsequently recognized that improvements could be achieved in control, particular in permanently inundated areas where the weevil *O. vitiosa* had difficulty completing its life cycle. Therefore, in addition to the released agents a stem-galling cecidomyiid fly (Fig. 5 and 6) was also tested in Australia and US quarantine and released in Florida in 2009. *Lophodiplosis trifida* prefers wetland habitats and attacked and killed seedlings and saplings in laboratory and field trials. It established at 24 out of 25 release sites and spread rapidly, travelling up to 23 km from release sites in only one year. Dense gall infestations now occur on *M. quinquenervia* particularly on Florida's south-west coast. Mortality of seedlings has been observed.

In addition, other biological control agents are also under evaluation. These include a related cecidomyiid fly, *Lophodiplosis indentata*, which galls leaves, a gall forming scale, *"Sphaerococcus" ferrugineus*, a bud weevil, *Haplonyx multicolor*, and a defoliating nolid moth, *Chora plana*. The latter is considered of high importance given that none of the existing agents damage older leaves. Another defoliator of these leaves, the pergid sawfly, *Lophyrotoma zonalis*, was rejected as a biological control agent given that it contained the same toxins implicated in sawfly poisoning of cattle in Queensland. The sawfly species responsible in that incidence, *L. interrupta*, forms large congregations of larvae at the base of trees as pupation occurred in the soil. *Lophyrotoma zonalis* pupates in the bark of the *M. quinquenervia* trees and would have been less accessible to grazing animals in Florida. However, starving migratory birds would be at a high risk of consuming toxic

Figure 6. Stem-galling by *Lophodiplosis trifida* can kill seedlings and saplings of *Melaleuca quinquenervia.*

Figure 5. The stem gall fly *Lophodiplosis trifida* was released in Florida as a biological control agent in 2008.

larvae and therefore this agent was rejected even though it proved to be specific and very damaging.

A gall fly, *Fergusonina turneri*, was also released in Florida but failed to establish. This fly forms galls of both the leaf and flower buds of *M. quinquenervia* in a unique association with the nematode *Fergusobia quinquenerviae*. The nematodes are carried from plant to plant in the female fly ovaries and transferred during oviposition. Nematodes exist inside the galls and invade only the female immatures. The evolutionary association between plant, fly and nematode has resulted in specific flies and nematodes for each of the broad-leaved *Melaleuca* species in Australia. These associations also occur in other Myrtaceae, including *Eucalyptus*.

The climbing fern *Lygodium microphyllum* is indigenous to the old world wet tropics including Australia and Asia. In its native habitat it is rarely problematic, growing as a delicate fern amongst the understory with a mix of other plant species. In contrast this fern forms dense curtains around native trees in Florida (Fig. 7) and often grows over the canopy, smothering all vegetation beneath. Additionally, the curtains consist mainly of dead material which facilitates severe forest fires. Because of its fine spores *L. microphyllum* has spread rapidly across southern Florida into the Everglades region where it has invaded pristine tree islands and most other wetland areas.

A limited array of agents has been found on this fern throughout its native range. The

Figure 7. A dense infestation of the climbing fern *Lygodium microphyllum* in Florida forming curtains around the trunk of native pine trees.

main agents consist of a series of pyralid moths whose larvae either defoliate whole plants or bore the stems of *L. microphyllum*. One defoliating species from Australia, *Austromusotima camptozonale*, was released in Florida in 2004 but failed to establish. The reasons for this failure probably relate to releases being made from a quarantine culture inbred over several years; further releases are planned. *Neomusotima conspurcatalis*, a second defoliating moth from Australia but also found in southeast Asia, was released in 2008 and established. Extensive damage to *L. microphyllum* has been observed in central eastern Florida by this insect (Fig. 8). Severely damaged plants have failed to re-grow following frosting unlike undamaged plants. An eriophyid mite, *Floracarus perrepae*, that curls the margins of pinnae and causes premature leaf drop was released but failed to establish.

A defoliating sawfly, *Neostrombocerus albicomus*, from Asia and another defoliating pyralid moth from Singapore, *Lygomusotima stria*, are currently being tested in quarantine. Current research is focusing on stem-boring pyralid moths (Figs. 9 and 10) from Asia. Three species have been identified; *Siamusotima aranea* from Thailand, a species of *Lygomusotima* from Singapore and an unidentified species from Hong Kong/mainland China. All of these agents have proved difficult to rear and techniques are being developed to establish quarantine cultures for further testing. Larvae have the potential to inflict significant damage as tunneling at the stem bases kills all plant

Figure 8. Defoliation of *Lygodium microphyllum* in Florida by larvae of the Australian pyralid moth *Neomusotima conspurcatalis* which was released in 2008.

Figure 9. Stem-boring pyralid larva from Asia which severely damages the climbing fern, *Lygodium microphyllum*.

Figure 10. The damage caused by stem-boring pyralid moths in Asia results in the death of all *Lygodium microphyllum* foliage above the larval tunnelling.

material above the point of entry. This may have significant implications if a stem-borer is released in Florida given the height of plants in the introduced range.

Three species of Australian she oaks, *Casuarina equisetifolia*, *C. glauca* and *C. cunninghamiana*, are weeds throughout the landscape of southern Florida where it is known as Australian Pine. These species are also infesting natural areas particularly *C. equisetifolia* which is invading the islands of Florida Bay, possibly interfering with nesting by turtles. These trees can also have economic impacts, often destroying property following hurricanes given their larger size in the introduced range and shallow root structures.

Surveys of potential biological control agents in Australia have identified an extensive range of herbivores that could be used to control all three tree species. Unfortunately, conflicts of interest exist with particularly two of the three species. *Casuarina equisetifolia* is valued by land holders as a shade tree, particularly along the coast despite the damage it can cause while toppling in high winds. *Casuarina cunninghamiana* has been recommended to citrus growers as a windbreak to stop the spread of citrus canker, despite being a noxious weed. If

these conflicts of interest can't be resolved, there are agents that could be utilized to control the spread of these weeds without causing visible damage to existing trees. A small Torymidae wasp, *Bootanelleus orientalis* attacks the seeds of both the above *Casuarina* species and could severely impact seedling recruitment and hence the further spread of Australia Pine across southern Florida. Additionally, there are gall-forming agents that are likely to be specific to each of the three *Casuarina* species. If conflicts of interest can be resolved, defoliators, stem-borers and sap-sucking bugs are available for utilization as agents. Of particular interest are a suite of psyllids and *Misophrice* spp. weevils which attack the foliage. Much of the exploratory research and insect taxonomy has been conducted with the kind assistance of Dr. Gary Taylor from the University of Adelaide.

The submerged aquatic plant hydrilla, *Hydrilla verticillata*, is a serious aquatic weed throughout the United States, particularly in Texas and Florida. This plant impedes water flow impacting on navigation, irrigation and recreational activities. It could be considered to be the worst weed in the US given its wide distribution and resistance to herbicides. Hydrilla is native to tropical and temperate regions of the old world including Australia, Asia, Africa and Europe. Exploration for biological control agents has been ongoing since the mid 1970s, but no adequate control has been achieved. Two biological control agents from Australia were released in Florida and Texas, a leaf mining fly, *Hydrellia balciunasi*, and a stem-boring weevil, *Bagous hydrillae*. Only the former established but has little or no impact on hydrilla infestations. Defoliating pyralid moths have been identified by ABCL that cause extensive damage in the native range but none have proved to be specific to hydrilla. More agents are needed. ABCL is moving on to new targets including the Queensland tree fern, *Cyathea cooperi*, tuckeroo tree, *Cupaniopsis anacardioides*, lobate lac scale, *Paratachardina lobata lobata a*nd the Asian Citrus Psyllid, *Diaphorina citri*. Given the previous track record of the laboratory in controlling serious weeds, future successes are certainly possible.

Acknowledgements

I would like to thank the previous directors of ABCL: Joe Balciunas, Charles Turner and John Goolsby; for their excellent direction and scientific leadership. I would also like to thank all current and former ABCL employees for their superb efforts in solving seemingly intractable weed and pest problems in the United States. ABCL has collaborated with many institutions over the years and I would particularly like to thank Ted Center and staff at the USDA-ARS Invasive Plant Research Laboratory in Fort Lauderdale, Amporn Winotai and staff at the Department of Agriculture in Thailand, Dr. Ding Jianqing and staff at the Chinese Academy of Sciences and Gary Taylor and Kerrie Davies from the University of South Australia. Funding assistance has been kindly provided by the Florida Fish and Wildlife Conservation Commission, South Florida Water Management District, Florida National Parks Service, US Army Corps of Engineers, US Fish and Wildlife and the US Department of the Interior.

The President closed the meeting, and reminded members that the next general meeting will be held at 1pm on Monday April 11th at the Ecosciences Precinct, Boggo Rd, Dutton Park.

Notice of Next Meeting

Monday 11th April 2011, 1pm

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Aethena tumida, the small hive beetle - a recently established scourge of apiaries

a presentation by

Dr Diana Leeman

(Senior Research Scientist, AgriScience Qld, DEEDI)

~

Meeting Room 3B (B block, level 3)
Ecosciences Precinct
Boggo Road, DUTTON PARK

ALL WELCOME
(Please sign the visitors register at the front desk)

PLEASE NOTE:
The April meeting is not being held in the ground-level seminar room where the March meeting was held.

INSTRUCTIONS:
After signing the visitors register at the front security desk, go through the turnstile to the left of the desk, then to the lifts on the right.
Once on level 3, turn right as you exit the lift.
Meeting room 3B will be on your right.

USDA Australian Biological Control Laboratory

Dr. Raghu Sathyamurthy joined CSIRO and the USDA Biocontrol team in late 2010. Raghu has a long history in biological control of weeds and a well published background in ecology. He will be adding his wealth of experience to several projects. Bradley Brown travelled with Tony Wright (on contract) to Singapore and Hong Kong in March to search for eriophyid mites on skunk vine, *Paederia foetida*, and to collect biological control agents of downy rose myrtle, *Rhodomyrtus tomentosa*. Fruit feeding Lepidoptera larvae were shipped to the USDA ARS Invasive Plant Research Laboratory quarantine facility in Gainesville , Florida. The USDA Biocontrol team is now well settled into the new facilities at the Ecosciences Precinct and the quarantine facility is now being utilised.

UPCOMING CONFERENCES

18-22 July 2011

Brisbane, Queensland

15th International Congress of Myriapodology
www.15icm.org

18-21 August 2011

Coolangatta, Queensland

Biennial Australian Institute of Medical and Biological Illustration (AIMBI) Conference.
http://www.aimbi2011.net/

28 August—1 September 2011

Christchurch, New Zealand

The 3rd combined Australian and New Zealand Entomological Societies Conference.
http://ento.org.nz/conference/

4-7 December 2011

Melbourne, Victoria

10th Invertebrate Biodiversity and Conservation Conference
http://ibcc2011.org/

2011—date not yet proposed

The International Organisation for Biological Control (IOBC) Australia and New Zealand Biocontrol Conference 2011.
http://aprs.iobc.info/conferences.html

More International conferences for 2011 are listed here:
http://www.entsoc.org/Periodicals/News/datebook?ip_login_no_cache=f4fd16452fa7f34b030784ba8aa5b139

NOTICE

Note from the Treasurer

Invoices for membership fees were mailed out to members with the current News Bulletin. Please note that a statement indicating that 'dues are overdue' on these invoices is, in most cases, erroneous. To clarify - the 2011 fee is now due, while the 2010 fee, if not yet paid, is overdue.

Members are also reminded to notify me about any changes to their email or postal contact details so that our records are up-to-date.

Desley Tree, Honorary Treasurer

Entomological Society of Queensland 2011

$500 Student Award

This is an award by the Society to encourage entomological research. Entries are judged by a panel of 3 entomologists appointed by the President of the Society. The winner will be announced at the May General Meeting and is then invited to present a summary of their research at the June 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 2010 or 2011 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 Lyn Cook at l.cook@uq.edu.au

Closing date for submissions is Friday 15th April 2011.

Student Award Sponsors:
Tropical Fruit Fly Research Group, Griffith University

Entomological Society of Queensland
2011 Student Award Entry Form

Name

_____

Title of thesis or report

_____

_____

_____

Degree

_____

Supervisor

_____

Date of Examiners report or grading

_____

Return address for thesis/report (if applicable)

_____

_____

Signature_____ Date_____

Send in thesis/report with a signed and completed entry form to:
Lyn Cook
Senior Vice President of the Entomological Society of Queensland
School of Biological Sciences
The University of Queensland
Brisbane, QLD 4072
Fax: 07 33651655

Entomological Society of Queensland
Nomination for Membership Form

www.esq.org.au

Title________ First name________________________________

Surname ____

Email ____

Address____

____________________________postcode______________Date_______________

Nominated by ____

Seconded by ____

☐ General membership **$30 AUD**	I would like to receive my News Bulletin
☐ Joint membership **$36 AUD**	☐ electronically (PDF) by email
☐ Student membership **$18 AUD**	☐ in hard copy by mail

☐ Cheque/Money Order enclosed

or Please charge my : ☐ Bankcard ☐ Visa ☐ Mastercard

Name on Card ____

Expiry Date ________________ Signature _________________________________

Please return completed form to : Honorary Secretary
Entomological Society of Queensland
P.O. Box 537
Indooroopilly
Qld. 4068

Please retain the receipt below for your records

- -

Entomological Society of Queensland—Receipt for payment of membership fees

Name ______________________________________ Date _____________

Amount paid $__________________ for year/s _______________

DIARY DATES 2011

Meetings held 2nd Monday of the month (or Tuesday if Monday is a public holiday)

MAR—Monday 14th	Matt Purcell	AGM and President's Address
APR—Monday 11th	Dr Diana Leeman	Small hive beetle, a recently established scourge of apiaries
MAY—Monday 9th		
JUN—Tuesday 14th		
AUG—Monday 8th		
SEP—Monday 12th		
OCT—Monday 10th		
NOV—Monday 14th		
DEC—Monday 12th		

SOCIETY SUBSCRIPTION RATES

GENERAL:	Person who has full membership privileges	**$30pa**
JOINT:	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT:	Students and others at the discretion of the Society Council	**$18pa**

Student membership conveys full membership privileges at a reduced rate.

THE *AUSTRALIAN ENTOMOLOGIST* SUBCRIPTION RATES

AUSTRALIA:	Individuals	**AU$33pa**
	Institutions	**AU$37pa**
ASIA/PACIFIC:	Individuals	**AU$40pa**
	Institutions	**AU$45pa**
ELSEWHERE:	Individuals	**AU$45pa**
	Institutions	**AU$50pa**

Subscriptions should be sent to the Business Manager,
The Australian Entomologist PO Box 537, Indooroopilly QLD 4068.

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

NOTICE OF NEXT MEETING

Monday 11th April 2011, 1pm

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***Aethena tumida*, the small hive beetle -**
a recently established scourge of apiaries

a presentation by

Dr Diana Leeman

(Senior Research Scientist, AgriScience Qld, DEEDI)

~

PLEASE NOTE the CHANGE OF MEETING VENUE

Meeting Room 3B (B block, level 3)
Ecosciences Precinct
Boggo Road, DUTTON PARK

ALL WELCOME
(Please sign in at Reception Desk)

NEXT NEWS BULLETIN

Volume 39, Issue 2 (April 2011)
due early May

CONTRIBUTIONS WELCOME

DEADLINE - Thursday 21st April
Send your news/stories/notices to the editor
(justin.bartlett@deedi.qld.gov.au)