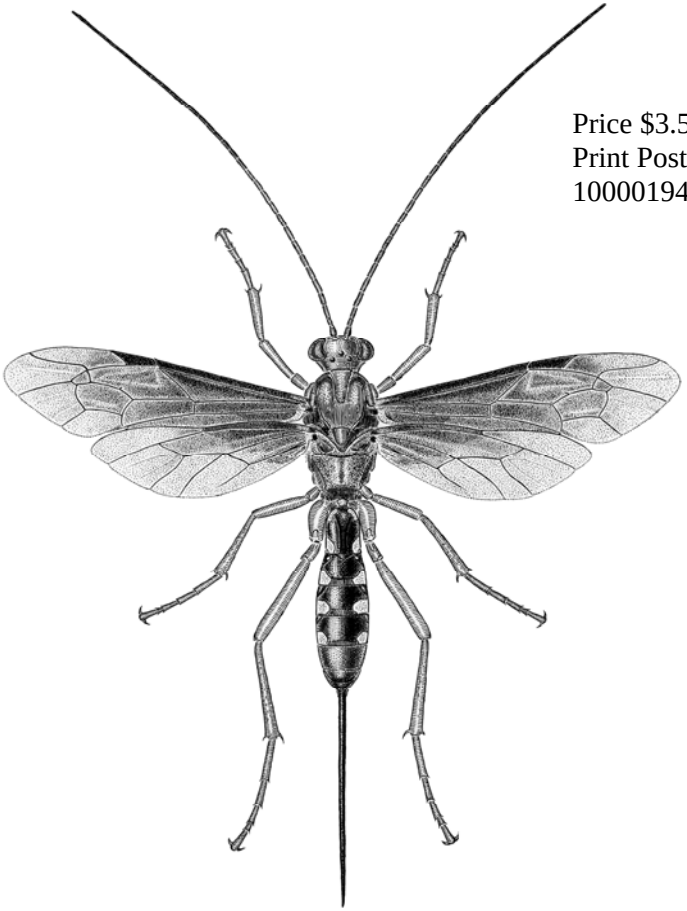
ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN



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THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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Front Cover Illustration: Ink illustration by William Manley of a female *Lissopimpla excelsa* (Costa, 1864) (Hymenoptera: Ichneumonidae: Pimplinae), a parasitic wasp (image copyright Qld Department of Agriculture, Fisheries & Forestry).

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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), 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 September 2013

Held in the Seminar Room, Ecosciences Precinct, Boggo Rd, Dutton Park, Tuesday, September 10th at 5:00pm.

Attendance: *Members:* Sarah Corcoran, Kathy Ebert, Lixin Eow, Julianne Farrell, Gio Fichera, Des Foley, Brodie Foster, Alexandra Glauerdt, Tim Heard, Susan House, Mark Hunting, Judy King, Kevin Lambkin, Simon Lawson, Diana Leemon, Fred McDonald, Lance Maddock, Anna Marcora, Gunter Maywald, Mike Muller, Bill Palmer, Brenton Peters, Harley Rose, Don Sands, Nancy Schellhorn, Owen Seeman, Geoff Thompson, Desley Tree, Susan Wright. *Visitors:* Kathryn Ash, Dean Beasley, Christian Horlock, Steve Jones, Chris King, Gary Kong, John Ness, Roger Shivas, Yu Pei Tan, Ken Walla.

Apologies: Mike Barnett, Chris Burwell, Lyn Cook, Christine Lambkin, Penny Mills, Morris McKee, Chris Moeseneder, John Moss, Federica Turco.

Minutes: The minutes of the August Meeting were circulated in News Bulletin Vol. 41 Issue 5, September 2013.
Moved the minutes be accepted as a true record: Simon Lawson. *Seconded:* Desley Tree. *Carried:* Unanimously

General Business:
1. We have two copies left of the book "Damselflies of New Guinea" donated by the author, Dr Albert Orr. These were taken by interested members.
2. The next BugCatch event is scheduled for Saturday, October 12th and will be held at the Franke Scrub Reserve, near Toowoomba. Check the Society website for full details.

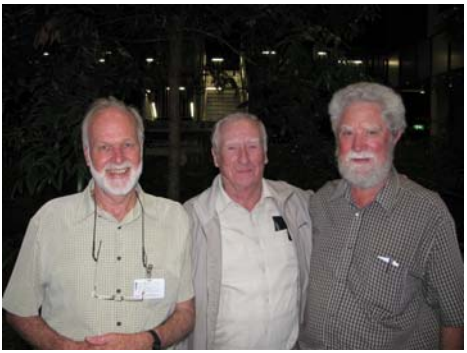
Main Business: This special meeting was devoted to the Biennial Perkins Memorial Lecture. Geoff Monteith gave a short presentation on Frederick Athol Perkins who was one of the 14 founders of the Entomological Society of Queensland on 14 June 1923 and who gave the inaugural address on "The Queensland Fruit Fly Problem" at its first meeting. He lectured in entomology at the University of Queensland from 1926-1965 and was Head of Department from 1952. Geoff pointed out that there were three people at the meeting who got their first employment in entomology from Mr. Perkins, *viz.* Fred McDonald, Harley Rose and himself.

The Memorial Lecture was delivered by Dr Ken Walker of the Museum of Victoria and was entitled "My Digital Evolution and its Consequences". It is reproduced on p. 63 of this Bulletin.

Vote of thanks: Bill Palmer thanked the speaker on behalf of members

Next Meeting: This will be at 1.00pm Tuesday, October 8th, and Dr Mandyam V. Srinivasan of the University of Queensland will speak on: More than a Honey Machine: Vision and Navigation in Honeybees and Applications to Robotics". See details elsewhere in this Bulletin.

Meeting closed: 6.05pm



L to R, Geoff Monteith (1962), Fred McDonald (1958) and Harley Rose (1964) were all employed by Perkins in the UQ Entomology Department.

THE 2013 PERKINS MEMORIAL LECTURE

My Digital Evolution - and its consequences

Dr Ken Walker, Museum of Victoria, Melbourne

I am a curator of entomology at Museum Victoria and our vision statement says: "Victoria, Australia, The World". While to some that may sound a bit grandiose, I take it literally that I should promote our collection data to the Victorian, Australian and World public audiences and that I should engage with these audiences as well.

It was interesting to listen to scientists being interviewed after the recent Australian Museum Eureka awards. People like Professors Rick Shine and Mike Archer bemoaned the lack of public engagement with both science and scientists. Indeed, I believe there is a confrontation and disconnection between science and the people who pay the bills. Most scientists are not very effective in terms of how they inform society's decisions and public policy. Just look at the state of the climate change debate. Still, this confusion and lack of clarity is likely to be due to the very nature of science itself – to always question what other scientists have stated. Such questioning has been misused in the climate change debate with politicians saying, "the scientific jury is still out" therefore there is no reason for us to act.

Citizen Science can help to bridge these gaps by providing the mechanisms, the information and the involvement to inform society's choices more effectively.

I present here a summary of the Perkins Memorial Lecture I gave, taking you through the social and data developmental changes during the development of 3 major websites I built between 1996 and 2013.

In a nutshell:

In 1996, I built a science website full of images and text information
In 2013, I released a science website with NO CONTENT.

I had come full circle in learning how best to enlist the public's support for Biodiversity. Which was realizing that what I wanted to show them was not as important as what they wanted to share with others and me.

A PDF of my entire illustrated talk can be viewed at: http://researchdata.museum.vic.gov.au/padil/powerpoints/bowerbird/Perkins_talk.pdf

THE BIOINFORMATICS WEBSITE – www.museum.vic.gov.au/bioinformatics

This website was first released in September 1996 and made available almost 450,000 specimen records from Museum Victoria and the Victorian Department of Primary Industries (DPI) for 5 major Victorian faunal groups – Butterflies, Snakes, Frogs, Lizards and Mammals.

Every species had its own fact sheet and its own set of unique images. BUT – the information was static, the species coverage was fixed and no one could ask a question about the data or seek help to identify something they have found in their backyard. The best way to engage people is to make the data relevant to their own backyard..

The Bioinformatics website is primarily educational, hence the extensive use of common names and the breaking up of common names into classification equivalents. A user can query on all Victorian Butterfly species, or just the Swallowtails or just an Alpine Skipper. In the Mammals section, the user can ask to see just the Victorian Insectivorous Placentals or the Dasyurids or Broad-toothed Rat. There's lots of options, lots of reducing the complexity and use of common as well as scientific names.

Although the Bioinformatics information is basically a "fact-sheet" style, the user was given the option to view sections of the data rather than being presented everything. We call this "drilling down" and it gives the user some control, but more importantly it allows the user to pick and choose what they want to see. For each Bioinformatics taxon group, we offered a unique dataset: Mammals have "Diet and reproduction" as well as dorsal, lateral and ventral images for the skull of every Victorian mammal; snakes have "Venom toxicity"; frogs have "Live calls"; butterflies have "Host plants" and "Caterpillar associations". Image pages always have a combination of live and museum images.

There are many ways to interpret raw online datasets, especially in the classroom. One of my favourites was the use of GIS maps to understand the distributions of a species: this shows the reliance of species on habitat, rainfall, altitude. It also demonstrates the value of our Legacy datasets – why do we keep specimens from 5, 10, 20, 100 years ago. As a curator I have been asked so many times: "Why do you have so many specimens of the same species?" Distributions maps are the best way to answer such questions. I show a map with 100 specimen data points and I ask: Which 99 data points should I remove and which 99 specimen will I remove from the collection? Another valuable chart to show is a flight phenology dendogram of a butterfly species. Most butterflies are on the wing across a range of months but if I were to only keep one specimens then which month should I select. The graphical display of our datasets clearly shows people that the more specimens and more data we have the better we know the species.

The Bioinformatics website was all about the push to provide access to our data. Rather than access to just the raw, individual specimen records, Bioinformatics presented interpreted data: Maps, Images, Common and Scientific Name. It has proved to be a successful, and now much copied, format.

THE PaDIL WEBSITE – www.padil.gov.au

The name PaDIL is an abbreviation for Pests and Diseases Image Library. How did this website come about?

The federal Department of Agriculture, Forestry and Fisheries (DAFF) realized their quarantine staff had a problem accessing reliable reference material to assist with the identification of the exotic pests and diseases listed under the Emergency Plant Pest Response DEED. Little verified reference material existed in collections of Australian museums, Australian herbaria or the Australian Quarantine and Inspection Service (AQIS). Diseases are best identified against live host symptoms and live fruiting bodies – quarantine restrictions would not

Bioinformatics

About Bioinformatics

Fauna Links

- Wildlife
- Butterflies
- Snakes
- Frogs
- Mammals
- Lizards

Student Projects

Resources

Credits

Copyright and Citing

Australian Butterflies, Snakes, Frogs, Mammals and Lizards on the Web - The Victorian Fauna.

Imagine a new book on Victoria's fascinating and unique animals. It took 150 years to write, contains almost 300,000 pages and over 12,000 pictures and deals with every species of butterfly, frog, snake, lizard and mammal.

Now turn that book into a web site and you have a huge chunk of Australia's fauna at your finger tips. So have some fun! You could ....

Listen to the call of the Pobblebonk Frog and track where it lives, learn what caterpillars eat, or plan a holiday around where you need to be and when to see whale migrations along the Victorian coastline. Discover what snakes live in your area and be aware of their venom toxicity. Does Victoria have Geckos? Show me our Dragon lizards! Tell me about our carnivorous marsupials! What mammals have we lost through extinction and what are we doing to protect the rest? What's an Australian Gull or Banjo Frog, a Weasel Skink, a Bandy Bandy or a Mallee Ninguai? And lots more....

It's great for project work! Create distribution maps, make predictions where else species could occur, compile or compare species checklists for any place in Victoria, graph butterfly flight times by months or across 150 years, source images and ask lots of questions.

The beauty of this site is that you can put real questions to a real data set and get back useful information.

This web site has been designed to be used by the general public and education groups but will also be a valuable scientific resource. It's easy to access and use - just select one of the image links to the right or text links to the left!

allow live diseases or viruses to be imported into Australia.

In 2000, DAFF tried to purchase from overseas institutions 25 specimens of each of the DEED listed exotic pests but it failed miserably as no one wanted to sell their collection specimens. Glynn Maynard of DAFF had an idea – why not create a virtual reference collection? Mike Grimm (Dept. of Agriculture and Food, WA) and I were asked to pilot a Pests and Diseases images library. We ran a successful PaDIL pilot project which led to a fully funded DAFF project for 8 years. Recently, the Plant Biosecurity CRC has taken over responsibility for PaDIL.

The PaDIL user statistics for the past 12 months are impressive:

No of PaDIL web pages:	**over 5,000** individual web pages
No of PaDIL images:	**over 35,000** montaged images
No of unique visitors:	**1,512,557**
No of hits (open images):	**16,985,225**
Highest Country usage:	**44% USA** (most from USDA)
Australia's usage:	**13.71% OZ** (Australia was the second highest user)

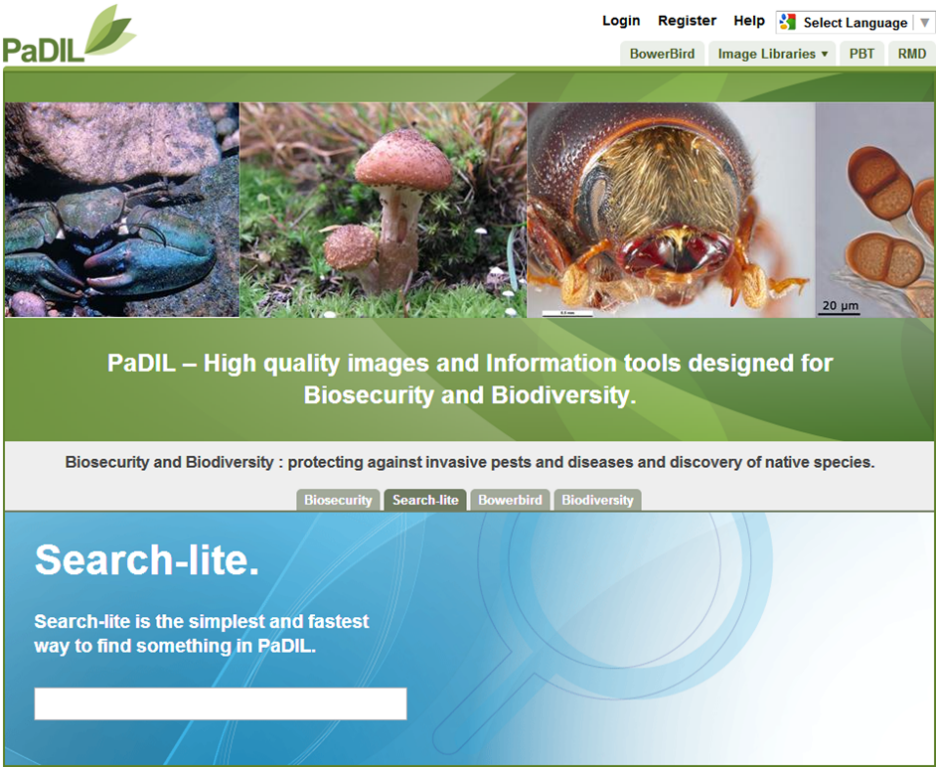
Most visitations to PaDIL come through the "side-door" from Google Searches. Google has ranked very highly the PaDIL species pages and its images.

What's different about PaDIL that makes it so effective and authoritative? The primary difference between PaDIL and other similar image libraries is that, with PaDIL, the recognised taxonomic experts express scientific literature through guiding the selection of high quality character images.

For example, for the PaDIL whiteflies (Aleurodidae) the process was as follows. Dr Jon Martin (BMNH) chose the exotic pest species to display, supplied the reference slides and marked the particular characters to be photographed for each species. Laurence Mound (ANIC) wrote the diagnostic host and distribution text. At the MV, I managed the image capture from the slide specimens and built the dataset. For the PaDIL smut fungi treatment, the two Australian experts in the field, Dr Roger Shivas and Dr Dean Beasley (both with Qld DAFF) converted their Australian Smut Fungi CD into a PaDIL website, including images, distribution maps and diagnostic text. In its original CD form this information had very restricted access and could not be indexed by Google. On PaDIL it has a world audience. This particular PaDIL library contains all 300 known Australian species (268 endemic and 32 exotic).

Although there are 7 unique datasets within PaDIL, all species can be queried from the Home Page through the Search-lite function. This feature allows the user to navigate the 7 libraries from a single point and allows users to choose which type of fact sheet they require. A typical PaDIL species page consists of:

Common and Scientific Names
(including synonymys)
Pest Status
Reliability index of the data
Diagnostic text
Diagnostic images (minimum of 5)
Species distribution
Species host range
References
Citation
License
PDF download



The main value of creating separate datasets was to accurately match the query facets to the library data. For example, the Australian Smut Fungi library contains query items relating to the Spore Mass or Perideum or Sorus position. Similarly, the Australian Biosecurity library contains query items such as Commodity Overview and Commodity Type. The Weed Seed library contains unique query items describing the shape, colour and size of individual seeds. To combine all of these query facets into a single library would lead to mass redundancy and would effectively degrade the value and efficiency of being able to query any particular part of the combined dataset. Separate libraries provide flexibility to the authors of the libraries to tailor the query structure to the data.

PaDIL uses a query function called "Faceted searching". This form of search function is more commonly used in e-commerce websites such as eBay and Car Auctions rather than science related websites.To me, a Species List is similar to an Online Stock catalogue.

RULE 1. A customer should never be able to request an item not stocked.

RULE 2. No customer should end a query with NO PRODUCT – no sales!

PaDIL employs a technique that many other science query based websites do not. This involves the process of **"**removal of redundant query character states".

PaDIL and the Chevron Barrow Island dataset

Barrow Island is 90 kms off North WA and is a Class A Nature Reserve made famous by the Harry Butler wildlife documentaries back in the 1970s. Chevron has been extracting oil on the island over the past 40 years but in 2003 applied for a license to build an enormous terminal to extract Liquid Natural Gas (LNG) to service a $50 billion contract with China. Eventually Chevron received State and Federal approval but with strict quarantine measures. Chevron had to restrict the entry of exotic species onto the island. The definition of exotic included native Australian species not known on the island. We all expected the quarantine license to be restricted to vertebrates but the license included invertebrates of which literally nothing was then known from the island.

So Chevron contracted Prof Jonathon Majer (Curtin University) to survey and document the invertebrates of Barrow Island as a baseline survey. Over a 3 year period, the island was intensively surveyed using a wide range of sampling techniques. These sampling techniques needed to satisfy an 80% or better chance of picking up a species so the Queensland University of Technology mathematics department was contracted to design a sampling regime that would deliver this accuracy.
The sampling collected almost 14,000 specimens which were then sent to specialists around Australia and the world. These experts identified almost 2,100 morphospecies of which only 268 had been formally described.

All seemed well until it came time for biologists on Barrow Island to begin comparing what invertebrates they were finding on the island with those collected from the baseline survey. All of the specimens collected in the Baseline study were stored more than 1000 km south of Barrow Island at the Curtin University, Western Australian Museum and Western Australia Department of Fisheries and Agriculture. There was no effective and rapid way to access to these specimens. So, PaDIL received a contract from Chevron to create a set of diagnostic images for each of the 2,100 species and to make these images available on the web – which we did.

Previous species on PaDIL, such as exotic pest species, did not have specimen collection data. However, every specimen collected on the Barrow Island baseline study contained accurate and detailed collection metadata of the sample site, date collected, GPS and collectors. This data allowed us to create a new query module for PaDIL – Spatial Queries – and we designed it in such a way that the users had complete freedom to create their own square or rectangular shaped spatial bounding box and to sample the known fauna from the user-defined area.

This is the type of question that biologists on the island could now submit as a PaDIL query: I have just collected a *Camponotus* ant "near" the airport in the SE corner of Barrow island. Show me the differences between the *Camponotus* species from the Baseline survey ants in that area.

Eleven species of Campontus ants were recorded on the island but doing a spatial search around the airport returned only 4 of the 11 species. The user is then able to create a comparative image table displaying the Dorsal, Lateral and Head views for all 4 species in one image based table. These diagnostic images easily allow species determination.

PaDIL has proved its worth to both and Australian and International Biosecurity audiences. The pests Australia is trying to

avoid are similar to the pests that USA or Europe or New Zealand are also trying to avoid. Before PaDIL was created, the AQIS staff really only had Google as the information source. PaDIL has provided a targeted and reliable information source on the major pests and diseases of the world.

The BowerBird Website
http://www.bowerbird.org.au
BowerBird is Australia's first natural history website dedicated to Citizen Science. What is Citizen Science? There are numerous definitions but here are some that I like:

Partnerships between the public and professional scientists

Engaging volunteers in professional research

Bringing purpose to a pleasure - their hobby has meaning

There is a confrontation and disconnection between science and the world that pays the bills. Scientists are not very effective in terms of how we inform society's decisions and policies. Citizen science bridges that gap by providing the mechanism, the information and the involvement to inform society's choices more effectively. It has been around for centuries. The American Audubon Society has been running an annual bird survey now for 113 years in the weeks around Christmas. It has documented major shifts in bird populations and has recorded species dying out and others increasing in numbers. Such results are only possible from long term surveys. Australia is far behind the Citizen Science activities of Europe, UK and USA. In these countries, Citizen Science is actively engaged on a local and national basis. They have had meetings, committees, conferences and I showed an image of the European Citizen Science Business Plan for 2013-2017.

So, what's "out there" in terms of natural history images? Well, there are now over 40 billion images on Flickr, FaceBook and YouTube. Do these images make good Citizen Science images? No, because few images possess the minimum Darwin Core metadata attributes of "where and when" the image was taken – ie. spatial and temporal data.

Here are a few statements about BowerBird:

- BowerBird's development was funded by ALA and developed at MV
- BowerBird is a socially interactive science website.
- There are only 3 other websites similar to BowerBird, all in the Northern Hemisphere: iSpot (BMNH), iNaturalist and Project Noah (USA)
- BowerBird's aim is to form communities of like-minded people who make connections.
- BowerBird is True Web 2.0 – you ask a question and someone else provides an answer.
- What is the difference between a Citizen and a Citizen Scientist taking a photo?
- The Citizen takes the photo and shares it on Flickr. The Citizen Scientist take the photo, records where and when it was taken and then shares the photo and metadata.
- All identified records on BowerBird get automatically uploaded weekly to Atlas of Living Australia (ALA).

I compared several of the major Citizen Science websites (ALA, iNaturalist, iSpot, Project Noah and BowerBird), in particular examining what each website mandated as the minimum dataset requirements to upload a record. ALA was the only one that mandated the author of a record who must provide an identification when uploading a records. This is fine for a scientific audience but it does not work well with amateurs and could be a real barrier, indeed a show stopper, if the amateur photographer does not know what he/she has photographed. The other four websites all use "crowd-sourcing" as a means to identify uploaded images. These Citizen Science websites aim to build communities of like-minded people that share and help each other.

I thinks the main differences between BowerBird and these other websites are, firstly, that BowerBird makes connections between the amateurs and professionals and, secondly, that BowerBird data feeds into national and international biodiversity aggregators – ALA and GBIF.

BowerBird was always designed to replicate the workings of a Field Naturalist Club. Such a club usually has new and older members and the older member tend to mentor the younger members. That's what BowerBird attempts to replicate. A young member posts something that he/she does not recognise. BowerBird makes connections for that young member and someone else identifies his upload and he learns from it. Unlike a typical Field Naturalist Club which meets for 2 hours or so every month or second month, BowerBird is online 24/7.

Another major difference between ALA and BowerBird and Project Noah is that ALA does not require the author of a record to provide "evidence" (here defined as Image, Sound or Video) to assist with or support an identification provided. In ALA, the identification must be accepted and cannot be questioned unless its distribution is well outside the known distribution or time frame for the species.

Citizen Science should be about sharing and helping others to learn. I believe providing "evidence" to support an identification is a wonderful way of sharing a connected experience in the true sense of Web 2.0. The

social nature of BowerBird can be seen in what it allows its users to do:

- Create their own projects
- Follow the uploads of another user
- Allows crowd-sourcing to identify an upload
- Allow crowd-sourcing to vote for a correct or incorrect identifications.

In BowerBird, only I can Edit my original uploaded observation **BUT**

> **Anyone** can Identify my observation – several IDs can be done
>
> **Anyone** can Tag or make a Comment on my observation
>
> **Anyone** can write a Description about my observation
>
> **Anyone** can Vote for my Image, Identification, Tags or Comments.

BowerBird is a socially interactive, science website. After much discussion, we decided on the BowerBird philosophy. We decided to divide data uploaded into BowerBird into two parts:

Part 1 – The TRUTH: This data is MANDATORY

"The Truth" = Evidence plus Spatial / Temporal metadata

Part 2 – OPIONIONS: This data is OPTIONAL

These include Identifications, Comments, Descriptions, Tags and Notes

A good example of this philosophy in practice is the following recent BowerBird upload:

On 5 July 2013, Ms Valda Jennings was walking on a beach near Devonport, Tasmania. She noticed something washed up on the shore that she did not recognize and she took a photograph of it. She then uploaded it into BowerBird and asked the question: "Does anyone know what this sea creature is?" Within a few hours of Valda uploading her image Dr Jan Carey, a senior lecturer at Melbourne University Zoology Department, posted these comments:

"Hard to be sure from just the photo, Valda. How did it feel when squeezed? If it felt spongy and water oozed out from all over when you did so, my guess would be a sponge! If it felt much firmer, more or less solid and somewhat gelatinous, then my guess would be a compound ascidian. If it felt like a tough bag only partly full, and had two distinct openings (siphons) or puckerings where the openings would be, then I'd call it a solitary ascidian. If it was really disgustingly smelly as opposed to just a bit smelly (or becomes so in a day or two), that would be more weight to the sponge hypothesis! On the basis of the photo alone, I'd go with sponge, but with only a moderate degree of confidence."

Once I saw the tentative sponge identification, I sent a copy of the image to the Australian sponge expert, Dr John Hooper, at the Queensland Museum. John soon replied that it was indeed a sponge and identified it as belonging to the genus "*Cliona*". Interestingly, this record could not have been initially loaded into ALA, as the author did not have an identification for the specimen, but once identified on BowerBird, it could then be uploaded into ALA to become a valuable source location for this genus.

BowerBird was released and launched in May 2013 but already has added 2,165 identified records to the ALA dataset. These records have placed new distribution point on maps (for some ALA species, the BowerBird records are indeed the only known points) as well as providing ALA with a wealth of high quality images – all copyright cleared for non-commercial use.

BowerBird works on a simple set of processes as defined:

1. Someone creates a Project which others may Join which then forms a community

2. Members of the Project upload images and spatial / temporal data

3. Members of the Project socially interact with Observations, IDs, Tags, and Descriptions etc. Connections are made (inside and outside the Project) to crowd -source an ID

4. Members of the Project share and learn from observations of others Australia's Biodiversity benefits through BowerBird uploads to ALA.

It is as simple as taking a photo, recording where and when the photo was taken and then sharing it – BowerBird in a nutshell.

BowerBird has its own purpose built Master Names Checklist for the Australian biota containing over 210,000 species name with each name accompanied by it full Classification and known Common Names. Names can be found either by typing in the leading letters of a common, family, generic or species name or by expanding the full classification of an organism. The Master Names Checklist ensures that spelling is always consistent with scientific nomenclature and that, when appended, it has its full classification in place. The benefits of both of these values are delivered in the Search mode where spelling mistakes are avoided and anyone can query at any classification level.

We will soon be releasing an iPhone and iPad BowerBird app which will have almost as much functionality as the website.

And, finally BowerBird has its first new species – a flatworm. A couple of very keen amateur photographers, Fred and Jean Hort, photographed a flatworm on granite boulders in the Wandoo National Park, east of Perth. They loaded the images onto BowerBird. When I saw their images I did not have a clue who to contact so I put out a request on the OZEntomology listserver asking if anyone knew anyone working on flatworms. Within 10 minutes, David Britton (Australian Museum) sent me a suggestion to contact Dr Leigh Winsor at James Cook University in Townsville. Leigh took to BowerBird like a duck to water and wrote a wonderfully informative reply to Fred and Jean and nominated their image as a new species. Following Leigh's BowerBird contact, we established a BowerBird Project dedicated to Australian Flatworms which Leigh now administers. There are now 14 members in this Project who have uploaded 17 flatworm images. The amazing thing for Leigh is that he is now seeing live images of flatworms that he had previously only seen as line drawings in publications. A win all round for everyone.

In closing, I would like to sincerely thank the Entomological Society of Queensland for inviting me to deliver the biennial F.A. Perkins Memorial lecture – I was proud to accept. I am a product of the old UQ Entomology Department and I value and reflect on my time at UQ with much enjoyment. Thank you.

UPDATE ON 'WEE KNOBBLY' MILLIPEDES

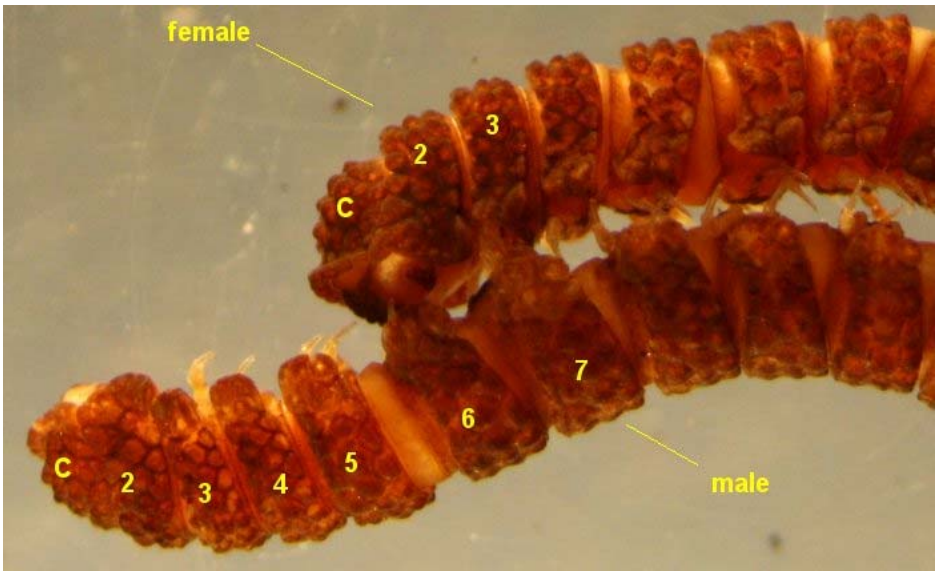
By Bob Mesibov, Penguin, TASMANIA

In the June/July 2010 News Bulletin (Vol. 38, no. 4) I contributed a short note on 'Wee Knobbly' millipedes from Queensland. Most of the tiny specimens had been Berlese-extracted from litter by Geoff Monteith and his Queensland Museum colleagues, and I reported that the unsorted material contained at least three families and a 'scary' number of species. Work has progressed and I list below the publications that have appeared since then.

For two of the higher taxa, Queensland's wee knobblies are now named, described and published. These comprise three new species of *Prosopodesmus* Silvestri, 1910 (Haplodesmidae), four new species of *Asphalidesmus* Silvestri, 1910 (Suborder Dalodesmidea, family uncertain) and 14 new species of *Agathodesmus* Silvestri, 1910 (Haplodesmidae).

The remaining family, Pyrgodesmidae, defeated me – there are simply far too many new species and their relationships are truly perplexing. What I've done to start work on this family (not previously reported from Australia) is to erect three new genera for six new species, all from Queensland.

I've now moved on from wee knobblies to much larger Queensland millipedes, but I'm confident there are many more, still-uncollected species, especially in the phenomenally biodiverse Wet Tropics.



A mating pair of *Prosopodesmus monteithi* Mesibov, Australia's largest and most colourful haplodesmid millipede.

Please keep depositing your berlesate and other millipede-containing 'residues' in the Queensland Museum – they could contain wee knobbly treasures!

The image of *Prosopodesmus monteithi* Mesibov shown here can be accessed, with much other information on these millipedes, at my website at http://www.polydesmida.info/polydesmida/mating.html The publications listed below have more images and are all open access at http://www.pensoft.net/journals/zookeys/

MESIBOV, R. 2011. New species of *Asphalidesmus* Silvestri, 1910 from Australia (Diplopoda: Polydesmida: Dalodesmidea). *ZooKeys* 93: 43-65.

MESIBOV, R. 2012. New species of *Prosopodesmus* Silvestri, 1910 (Diplopoda, Polydesmida, Haplodesmidae) from Queensland, Australia. *ZooKeys* 190: 33-54.

MESIBOV, R. 2012. The first native Pyrgodesmidae (Diplopoda, Polydesmida) from Australia. *ZooKeys* 217: 63-85.

MESIBOV, R. 2013. New species of *Agathodesmus* Silvestri, 1910 from Australia (Diplopoda: Polydesmida: Haplodesmidae). *ZooKeys* 325: 33-64.

NAME CHANGE FOR THE BLUE TRIANGLE

One of the commonest butterflies in eastern Australia is the Blue Triangle which breeds abundantly in Brisbane backyards on camphor laurels and other Lauraceae. It's always been known as *Graphium sarpedon* (Linnaeus), regarded as single species extending from the Solomons to mainland China with a number of subspecies. Both Australian and NG populations have been regarded as the single subspecies, *Graphium sarpedon choredon* (Felder & Felder), and this treatment is followed in

Male of the Australian Blue Triangle, formerly *Graphium sarpedon* but now *G. choredon* (Queensland Museum photo).

Michael Braby's monographic *Butterflies of Australia*. However an intensive review of the whole complex of forms that have been placed under the species name *G. sarpedon* has just been published in Germany by Page & Treadaway (2013). They have combined studies on DNA, wing patterns, and both male and female genitalia to produce a radical synthesis of the species complex. This recognises 8 full species and a large number of subspecies. Most interesting is that Australian and NG populations are now distinguished as separate full species. New no-

menclature from the paper is listed here for Australian and adjacent populations: *Graphium choredon* (Felder & Felder, 1864) (Australia only, no subspecies recognised); *Graphium isander imparilis* (Rothschild, 1895) (Aru, Waigeo, New Guinea, New Britain, New Ireland, Duke of York); *Graphium isander isander* (Godman & Salvin 1888) (Bougainville to northern Solomons); *Graphium isander impar* (Rothschildt, 1895) (New Georgia group of the Solomons); *Graphium jugans kawimitsuoi* Fujioka, 1997 (Timor). Clearly specimens from Torres Strait, where two full species are now presumed to abut one another, need to be re-examined. The paper makes no mention of this problem. For those collectors rushing to check their collections the paper states: "The more yellowy green colour and the short pointed tails are the most distinctive external features separating *G.choredon* and *G. isander imparilis*." The publication is available in the Queensland Museum library.

PAGE, M. G. P. & TREADAWAY, C. G. 2013. Speciation in *Graphium sarpedon* (Linnaeus) and allies (Lepidoptera: Rhopalocera: Papilionidae). *Stuttgarter Beiträge zur Naturkunde, Neue Series* 6: 223-246.

TARANTULA VENOM KILLS PESTS

The University of Queensland announced in a press release on 12 September that a group of researchers at their Institute of Molecular Science have demonstrated that the venom of the common giant tarantula of northern Queensland (*Selenotypus plumipes* Pocock, Theraphosidae) has powerful toxic capacity against certain insect pests. The lead researchers are Professor Glenn King and Dr Maggie Hardy. They extracted the toxic component from the venom (a peptide called OAIP-1) and tested it in feeding trials against cotton bollworm (*Helicoverpa armigera*) and termites (*Coptotermes acinaciformis*) and in injection trials mealworms (*Tenebrio molitor*). Spider venoms have evolved as compounds that are toxic when injected into tissue. However the exciting

A male of the Queensland tarantula, *Selenotypus plumipes* (Queensland Museum photo)

aspect of the UQ research is that their extract of tarantula venom proved to be more toxic than many commonly used insecticides when taken orally by both the bollworm caterpillars and termites. This means that there is potential for these new compounds to be developed as a new class of environmentally friendly insecticides that may replace existing chemicals as resistance develops. Their recent paper is cited below and is available for open access at http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0073136

HARDY, M.C., DALY, N.L., MOBLI, M, MORALES, R.A.V., KING, G.F. (2013) Isolation of an Orally Active Insecticidal Toxin from the Venom of an Australian Tarantula. PLoS ONE 8(9): e73136. doi:10.1371/journal.pone.0073136

REPORT ON ORTHOPTERA CONGRESS, CHINA

By David Rentz, Kuranda

Fig. 1. One of the orthopteran images hand-painted on silk received by delegates.

The 11th International Congress of Orthopterology was held at Kunming in Yunnan Province, SW China from 11-15 August. Delegates received traditional Chinese paintings as mementos (Fig 1). Approximate 150 delegates from 20 countries attended, including five from Australia (Fig 2) and Peter Johns from New Zealand. The conference was jointly chaired by Zhang Long from the China Agricultural University and María Marta Cigliano, Universidad Nacional de La Plata, Argentina.

The site for the conference was Yunnan University, a pleasant campus, well planted and somewhat isolated from the city of some 7 million inhabitants! Talks ranged from biology, physiology and control of locusts to the latest techniques in taxonomy and classification. The meeting was marred a little by condensing the talks to three days with triple parallel sessions which meant most people missed talks because of clashes. Both Chris Adriaansen and David Hunter gave papers on Australian locust problems.

Several orthopterists were honoured during the conference. Dr. R. Nelson Foster of the US Dept of Agriculture won the "Sir Boris Uvarov Award in Applied Acridology" for his work on grasshopper and Mormon cricket pest management. The three winners of the "D.C.F. Rentz Award" for lifetime achievement by late career workers were Le Kang (Chinese Academy of Sciences), Meier Paul Pener (Hebrew University of Jerusalem, Israel) and Seigi Tanaka (National Institute of Agrobiological Sciences, Japan) received the "D.C.F. Rentz Award" in recognition for their outstanding contribution and lifetime devoted to the study and research of Orthopteroid insects.

On the post-conference tour we visited the ancient cities of Da Li and Lijiang in Tibet and spent some time in Shangri-la. The latter is a bit of a misnomer. It is nothing like the concept of the city that you might have in mind. It is a relatively "new" city in the middle of a large plateau populated by Tibetans. The 'original" Shangri-la is probably more mythical than real and is in India. However, the Chinese Shangri-la has an "old city" with cobblestone roads and old buildings housing all sorts of markets. Although it was summer, visits to National Parks revealed only a few orthopterans (Figs 3&4). There should have been a wide range of species since it was the summer period when most species are active. But this was not the case and we had no explanation. Birds and mammals were similarly uncommon.

The new Orthopterist's Society President elected was Prof. Michael Samways, Univ.

Fig. 2. The Australian contingent: (L to R) James Woodman (Australian Plague Locust Commission, Canberra), David Hunter (formerly APLC, now consultant), Peter Spurgin (APLC), David Rentz (CSIRO retd.), Christopher Adriaansen (Director, APLC), Peter Berg (DPI Victoria).

Fig 3. One of the few orthopterans found was this brachypterous phaneropterine tettigoniid found on a large-leaved composite high in the mountains of Tibet.

Fig 4. An unidentified wingless female pyrgomorphid.

of Stellenbosch, South Africa. The host country for the next conference in 4 years time is not selected yet but both Brazil and Mauritania have lodged bids.

Fig 1. Delegates on a sunny morning at the Gall Conference.

GALL CONFERENCE AT LAMINGTON

by Kathy Thomson, DAFF, Brisbane

The 6th International Symposium on the Biology and Ecology of Gall Inducing Arthropods and Related Endophytes (ISBEGIA) was held on 4-8 August at O'Reilly's Rainforest Retreat in Lamington National Park, Queensland. The conferences have been held at irregular intervals around the world since 1992 under the guidance of the International Union of Forestry Research Organizations. This was the first to be held in Australia and was assisted by the Australian Entomological Society. Approximately 60 delegates attended from 18 countries including: Taiwan, Brazil, Japan, Israel, USA, Kenya, Hungary, South Africa, France, Saudi Arabia, Costa Rica, Bangladesh, New Zealand, India, Pakistan, Nigeria, South Korea and Australia (Fig 1).

Topics covered by the speakers included systematics, taxonomy, bio-control, pest management, biology and ecology of gall forming arthropods. The symposium was opened by Dr Jack Schultz (Fig 2), the head of Plant Sciences at University of Missouri, with a thought provoking presentation on why galls often look similar to fruiting bodies. His studies have shown that many insects produce galls by switching on plant reproductive pathways to produce carpel-like galls. The symposium was reluctantly closed by Dr David Yeates who blew our minds with a 3D reconstruction of the inside of a fergusoninid gall.

Fig 2. Keynote speaker, Dr Jack Schultz

A wide range of fascinating posters was displayed with our own Bradley Brown winning a prize for his outstanding poster

Fig 3. Sunset at Moonlight Crag

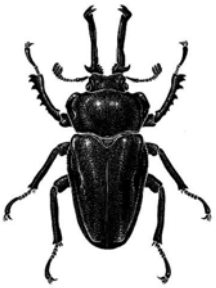
'Gall formers as potential biological control agents of *Casuarina* spp. in the USA'. Peter Kolesik, from Bionomics Ltd, Adelaide, ran a workshop on identification of the difficult complex of cecidomyiid midges which cause galling in mango, some of which are potential pests in Ausralia.

Fig 4. Psyllid galls at O'Reillys

The social events included a merry reception dinner, drinks at the breathtaking Moonlight Crag at sunset (Fig 3), an engaging corroboree and wildlife encounter as well as informative field trips through the glorious Lamington National Park where the surrounding rainforest provided plenty of fruitful hunting for plant galls (Fig 4).

Proceedings of this year's conference will be published in a forthcoming special issue of the Australian journal *Plant Protection Quarterly*. In the spirit of collaboration on arthropod galling the next symposium will be held in 4 years time in Taiwan.

WANT TO JOIN THE SOCIETY ?



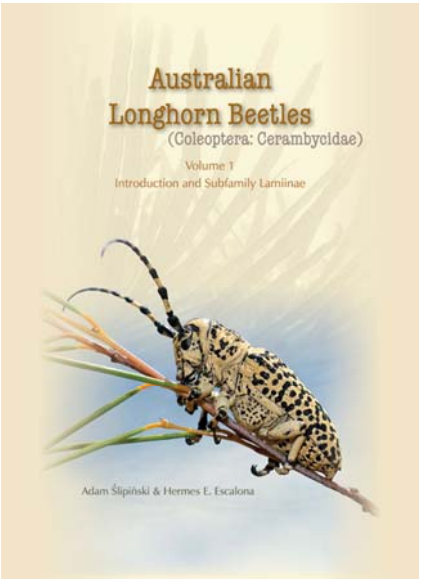
Visit our website at http://www.esq.org.au/ where you will find nomination forms and full details of fees and addresses. There are also forms for existing members to use to pay their subscriptions. Coming meetings and excursions are listed. Procedures for publishing in our journal, *Australian Entomologist,* are explained with a full Guide to Authors plus forms for taking out a subscription to the journal.

NEW BOOK

Australian Longhorn Beetles (Coleoptera: Cerambycidae). Volume 1. Introduction and Subfamily Lamiinae.

By Adam Slipinski and Hermes Escalona. CSIRO Publishing/ Australian Biological Resources Study, 504 pp, hardcover, 297 x 210 mm, 200 colour plates. $150, available online at **http://www.publish.csiro.au/nid/222/pid/7110.htm**

This impressive volume is the first of three planned on Australian Cerambycidae by those productive folk in the Coleoptera Section of CSIRO's ANIC in Canberra and represents the first fruits of a substantial grant from the ABRS aimed at bringing this well known and economically important group of beetles out of the dark ages of taxonomic intractability in Australia.



Popularly known as "longhorns" or "longicorns", the Cerambycidae is one of the most easily recognised groups of beetles, a family that worldwide has over 33,000 species in 5,200 genera. With over 1,400 species classified in about 300 genera, this is the sixth largest among 117 beetle families in Australia. They often attack and kill living forest or orchard trees and develop in construction timber (like European House borer, introduced to WA), causing serious damage. Cerambycidae feed on living or dead plant tissues and play a significant role in all terrestrial environments where plants are found. Larvae often utilise damaged or dead trees and, through feeding on rotten wood, form an important element of the saproxylic fauna, speeding energy circulation. Many are listed as quarantine pests because of their destructive role to the timber industry.

This first volume begins with a general introduction to the family in Australia, with sections on biology, phylogeny and morphology of adults and larvae, followed by a key to the subfamilies. The major part then deals comprehensively with the large subfamily Lamiinae. All 74 genera are diagnosed and described with an illustrated key to allow their identification. There is a major restructuring of the Australian fauna with about ten new genera plus hundreds of new synonymies and new combinations. The treatment of each genus includes a list of all species with synonymies, bibliographic references and summaries of biological data.

There are 200 full colour plates including illustrations of whole beetles for almost all species. This will greatly facilitate identification because most species of these large beetles are readily recognised from photographs. Their large size, attractive colours and often spectacular appearance make them popular with collectors and this book will allow them to bring their collections up to a modern standard - not to mention our museums where longicorn collections are often in poor taxonomic state.

NEW BOOK

Australian Beetles. Vol. 1 Morphology, Classification and Keys

By John Lawrence and Adam Slipinski. CSIRO Publishing, 576 pages, 276 x 210mm, more that 1100 illustrations including numerous colour plates. ISBN 9780643097285. Price $195.00. Expected October, purchase online at http://www.publish.csiro.au/pid/6466.htm

The Coleoptera comprise the most speciose group of animals and their classfication and phylogeny, particularly at the higher level, is a major scientific challenge and has undergone quite major realignment in recent years. The global taxonomists who have had on overview of the entire Order and have been centrally involved in this modern era of change could be counted on the fingers of two hands but Australia is lucky in having two of them resident here. One is John Lawrence, Curator of Coleoptera at CSIRO Australian National Insect Collection until 1999, and an extraordinarily busy retiree in Queensland for a decade and a half since then. The other is Adam Slipinski, who came from a distinguished career in Poland to take up John's vacated position at CSIRO in 2000. They have worked in close collaboration since then.

This volume is their largest project to date and is the first of a three-volume series which will comprise a comprehensive treatment of the entire unique and poorly studied Australian fauna. It contains keys to all 117 beetle families found in Australia and includes over 1100 illustrations of adults, larvae and anatomical structures. It is based in part on Lawrence & Britton's out-of-print *Australian Beetles*, but is fully updated and greatly expanded.

The biology and morphology for all major beetle lineages is described and illustrated, along with anatomical terms which clarify the characters and terminology used in the keys; few other resources for beetle identification include such a detailed morphological background. A chapter on the fossil record is also included, and family sections provide full descriptions of adults and larvae, including the world distribution of each family.

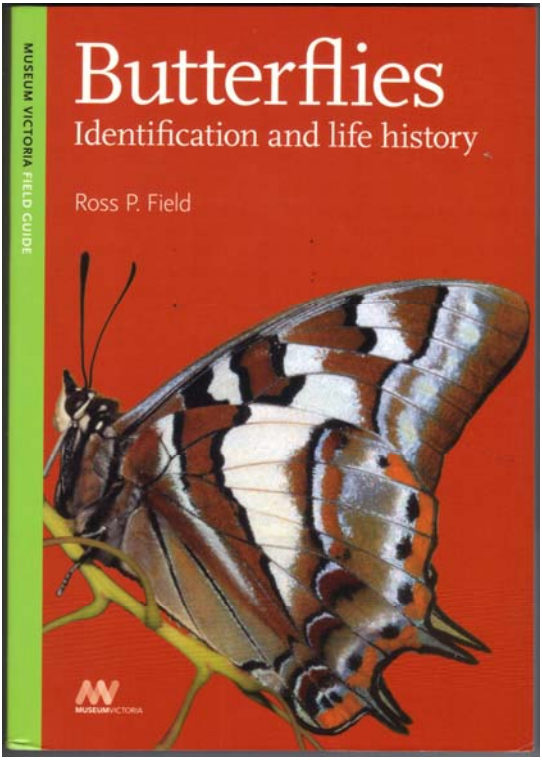
The revised family identification key (currently recognised as one of the most valuable keys worldwide) will aid quarantine agents, biologists and students in identifying members of the most species-rich order of animals.

The following two volumes will contain detailed treatments of individual families, mostly written by taxonomists around the world who have specialised knowledge of each family and its Australian members. Most will have keys to generic level and it is expected that all genera will be illustrated.

NEW BOOK

Butterflies: Identification and Life History

By Ross P. Field. Museum Victoria Publishing, 324 pp, ISBN 978-1-921833-09-0. Hardcopy paperback price $29.95, E-book pdf $19.95. Both available for online purchase at http://museumvictoria.com.au/about/books-and-journals/books/science/new-releases/butterflies/



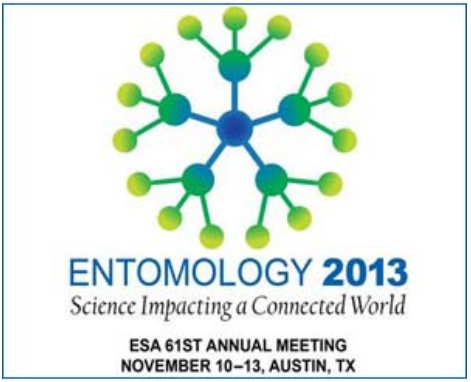
This attractive and extremely affordable book is one of a series of field guides published by the Museum of Victoria. Its author has collected and studied Victorian butterflies for almost 50 years and was Director of Natural Sciences and the Environment Program at the Museum before retirement.

The book is a guide to only the 130 species of butterflies which occur in the state of Victoria but since these comprise 30% of the whole Australian fauna, and since fully 80% of Victorian butterflies occur right up to North Queensland, the book will be useful to anyone interested in Australian butterflies. For those 130 species it brings together the most detailed photographic coverage of life history stages yet published for an extensive subset of the Australian butterfly fauna. For almost every species a full set of high quality images of eggs, young larvae, mature larvae, pupae, food plant and both pinned and living adults is presented. The great majority of these photographs are by Ross, himself, who has spent the last twelve years in pursuit of life histories of the more elusive species to make the book almost complete.

Each species gets a single double page spread with all photographs and text compactly arranged. Distribution is shown with points blue for pre-1970 records and red for later records. This scheme allows a rapid visual assessment of the range changes that have occurred over time and will be valuable for tracking climate change effects. Temporal records are shown in a proportionate manner on a 12 month bar graph. This handy, compact way of showing the recorded geographic and temporal parameters of each species in Victoria makes it easy for the collector to know if catches represent new information.

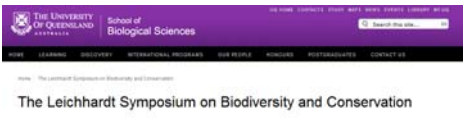
Upcoming conferences and events

8-12 November 2013
Kuching, Malaysia. 2nd Global Conference on Entomology. http://www.gce2013.com/



10-13 November 2013
Austin, Texas. Entomology 2013 (Entomology Society of America) http://www.entsoc.org/entomology2013

1-6 December 2013
Sydney, New South Wales. Joint Society of Australian Systematic Biologists, Invertebrate Biodiversity & Conservation, and the Australasian Systematic Botany Society. Theme: Systematics without Borders 2013. http://www.systematics2013.org/



October 23-24 2013
University of Queensland, Brisbane Leichhardt Symposium on Biodiversity and Conservation. A combined German-Australian symposium to celebrate the 200th anniversary of the birth of explorer Ludwig Leichhardt. Free attendance. Details and registration at: http://www.biology.uq.edu.au/leichhardt-symposium

13-18 July 2014
Cairns, Queensland, Australia. 17th Congress of the International Union for the Study of Social Insects (IUSSI). More information at: http://www.iussi2014.com/index.html

20-24 July 2014
Cairns, Queensland, Australia. 51st Annual Meeting of the Association for Tropical Biology and Conservation. Theme: The Future of Tropical Biology and Conservation. More information at: http://atbc2014.org/

25-30 November, 2016
Orlando, Florida, USA. XXV International Congress of Entomology. Theme: Entomology Without Borders. More information at: http://www.ice2016orlando.org/

More international conferences and events can be found at http://www.entsoc.org/Periodicals/News/datebook

NOTICE OF NEXT MEETING

Tuesday 8th October 2013, 1.00pm

Professor Mandyam V. Srinivasan

Professor of Visual Neuroscience at the Queensland Brain Institute
School of Information Technology and Electrical Engineering
University of Queensland

More than a honey machine: vision and navigation in honeybees and applications to robotics

Flying insects are remarkably adept at seeing and perceiving the world and navigating effectively in it, despite possessing a brain that weighs less than a milligram and carries fewer than 0.01% as many neurons as ours does. Although most insects lack stereo vision, they use a number of ingenious strategies for perceiving their world in three dimensions and navigating successfully in it. The talk will describe how honeybees use their vision to stabilize and control their flight, and navigate to food sources. Bees and birds negotiate narrow gaps safely by balancing the apparent speeds of the images in the two eyes. Some of the insect-based strategies are being used to design, implement and test biologically-inspired algorithms for the guidance of autonomous terrestrial and aerial vehicles. Application to manoeuvres such as attitude stabilization, terrain following, obstacle avoidance, automated landing, and the execution of extreme aerobatic manoeuvres will be described.

1.00pm, Seminar Room 1
Ground Floor, Ecosciences Precinct
Boggo Road, DUTTON PARK

ALL WELCOME

DIARY DATES 2013

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

MAR—Tuesday 12th	Geoff Thompson	AGM and President's Address
APR—Tuesday 9th	Michael Ramsden	*Sirex* wood wasps in Queensland
MAY—Tuesday 14th	Dr Mike Furlong	Plant responses to herbivory: complex interactions between parasitoids, predators and prey
JUN—Tuesday 11th	Notes & Exhibits / Student Award Presentation	
AUG—Tuesday 13th	Dr. Doland Nichols	Bell Minor associated dieback of eucalypt forests
SEP—Tuesday 10th	Dr. Ken Walker	Perkins Memorial Lecture "Advancing Australian Biosecurity and Biodiversity through the web"
OCT—Tuesday 8th	Prof. Mandyam Srinivasan	More than a honey machine: vision and navigation in honeybees and applications to robotics
NOV—Tuesday 12th	Prof. Helen Wallace	Promiscuous plants and strange bee behaviour: reproduction in Australian plants
DEC—Tuesday 10th	Notes & Exhibits and Xmas BBQ	

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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. Student membership conveys full membership privileges at a reduced rate.	**$18pa**

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	Institutions	**AU$45pa**
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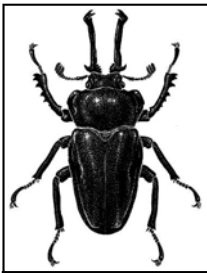

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

NOTICE OF NEXT MEETING

Tuesday 8th October 2013, 1pm

Professor Mandyam V. Srinivasan

Professor of Visual Neuroscience at the Queensland Brain Institute
School of Information Technology and Electrical Engineering
University of Queensland

More than a honey machine: vision and navigation in honeybees and applications to robotics

~

Seminar Room 1
Ground Floor, Ecosciences Precinct
Boggo Road, DUTTON PARK

More venue details available at
http://www.esq.org.au/meetings.html

ALL WELCOME

NEXT NEWS BULLETIN

Volume 41, Issue 7 (November 2013)

CONTRIBUTIONS WELCOME

DEADLINE - Wednesday October 16, 2013

Send your news/stories/notices to
geoff.monteith@bigpond.com