ANICdotes

The official newsletter of the Australian National Insect Collection

ISSUE 2 • APRIL 2013

CSIRO ECOSYTEM SCIENCES
www.csiro.au

Editorial

David Yeates, Director, and Beth Mantle, Manager, ANIC

Welcome to the second issue of *ANICdotes*. Your feedback on the first issue was much appreciated, and we are very pleased you found the newsletter useful and interesting. The last 6 months have been extremely busy in ANIC, and we have much to report in this issue. In particular, the CSIRO collections have advertised for 4 permanent positions in molecular systematics, and one of these positions will be situated in ANIC working on insects. Strategically, this is a very important position for us as we build our capability and impact in this area of research. We will have more on the successful applicant in a future issue.

Just after Easter, a number of research staff from the collections participated in the *Centre For Biodiversity Analysis* conference on Biodiversity Genomics. During the conference Professor Bernie Misof and Dr Karen Meusemann (pictured) visited ANIC. Bernie is head of Molecular Biodiversity research at Forschungs Museum Koenig in Bonn, Germany, and Karen is currently a postdoc in his lab. Bernie is also one of the principal investigators in the *1000 Insect Transcriptomes* project (www.1kite.org) and gave a keynote at the conference. Karen has just accepted the Schlinger postdoc in ANIC to work on the phylogenomics of dipteran transcriptomes, and will start here in July 2013. The conference on Biodiversity Genomics was very stimulating, and proved that museums and collections have an important role to play in the future of this field, from providing material as a source of genomic data to framing questions in biodiversity science.

ANIC has seen a large number of visitors through the doors in the last six months, with intense activity in the Coleoptera, Orthoptera, Hymenoptera, Diptera, Mites and Lepidoptera collections.

ANIC is very fortunate to have a large team of dedicated volunteers who make a significant contribution to the on-going care and maintenance of the collection. Their generosity was acknowledged in March with a special morning tea to thank them for their contributions. This issue we also highlight a special donation of butterfly specimens that has added some very special specimens to our Lepidoptera collection.

The ANIC website has been updated and now includes information for visitors and outlines the various requirements for collecting insects in Australian states and territories. We have also uploaded links to information relating to specific collections, such as our primary types, bulk sample residues and slide collections. If you would like to see additional information provided on our website, please contact Beth.

David Yeates & Beth Mantle

INSIDE THIS ISSUE

SUBSCRIBE | UNSUBSCRIBE

CONTACT: anicdotes@csiro.au | www.csiro.au/anic

BANNER: *Graphium macleayanus* image from the Biodiversity Heritage Library.
PHOTOS: all photos taken by Chris Manchester except page 1 by David Yeates, page 2 by Hermes Escalona, page 4 by You Ning Su, Ted Edwards and the Pulvertaft family, page 5 by Garry McDonald and page 8 by CSIRO.

Post Doc Profile: Sara Pinzon-Navarro

Sara Pinzon-Navarro joined ANIC in August 2011 as a Postdoctoral Fellow, funded by the Zimmerman Trusts.

Sara works in understanding the evolutionary patterns between seed-feeding weevils and Acacias in Australia. She is targeting the genus *Melanterius*, which is used in South Africa as a biocontrol agent for invasive Acacias. To date, five *Melanterius* species have been used as biocontrol agents, though many more species could potentially be used. Cryptic species in this genus have made their study difficult, however Sara will focus on delimiting these species by molecular means and further utilize morphological characters to describe these potential biocontrol species. She is also investigating species host-specificity, host breadth, distribution and biology. Her work on *Melanterius* species will be complemented with studying the systematics of this genus as well as closely related genera in collaboration with Rolf Oberprieler. Sara works in collaboration with Joe Miller, from the division of Plant Industry in CSIRO to study the evolutionary patterns of *Melanterius* and their *Acacia* hosts.

Sara started her passion for entomology working with aquatic insects as water quality indicators, while her undergraduate studies in Mexico. During her Masters in Entomology she worked with weevil diversity in Panama. She continued her work on Neotropical seed-feeding weevils during her PhD at Imperial College London and the Natural History Museum. Before joining us, Sara was a post-doctoral fellow at the Smithsonian Tropical Research Institute, Panama, continuing her weevil studies.

Sara enjoys travelling, and on her quest for fresh specimens for molecular analysis, she has travelled almost all Australian states and territories. In June 2012 she started her field season joining the ANIC team on the Pungalina expedition in Northern Territory, organised by the Royal Geographical Society of Queensland. She visited different areas in Queensland and in different seasons, in order to collect many host species and seed feeders. One of these trips was done in collaboration with Julia Mynott, from La Trobe University. She has also travelled to the Grampians, Lake Eildon, Black Range NP and Mt Buffalo in search for Victorian *Acacia* and *Melanterius* species. With ANIC colleague Hermes Escalona, she travelled most of the southern hotspot area in Western Australia, driving more than 6000 km from Nambung to Cape Le Grand. In collaboration with ANU colleague Carlos Bustos, Sara went on a search for *Melaleuca* chrysomelids and seed-feeding *Acacia* weevils in Northern New South Wales. Just before the Entomological Conference last November in Hobart, she cruised Tasmania with Brazilian botanist Vanessa Terra looking for the southernmost *Melanterius* species. All these trips we done with the invaluable help of Debbie Jennings, the Zimmerman weevil technician. This year Sara will collect more species from South Australia, the Australian Capital Territory and possibly return to Victoria and Queensland. To obtain more specimens from New South Wales, Sara is collaborating with Nigel Andrew, from the University of New England studying samples collected in a long-term study of Acacias.

Sara Pinzon-Navarro collecting in the field

At the end of February, Sara attended the Biosystematics European Meeting in Vienna, Austria, to present her current work at CSIRO. Taking advantage of this trip to Europe, Sara visited colleagues at the Natural History Museum in London to work with her ongoing studies on Neotropical weevils.

In her spare time you can find Sara travelling a bit more around Australia visiting the natural beauty of our country.

ANIC beetle gang activity

Cate Lemann

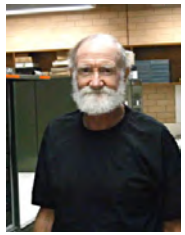
ANIC Beetle land has been very busy for the last year or so with over 20 people based here beetling away on collection dependent projects and over 25 national and international visitors, film crews and artists working in the collection in the last 6 months. The Gang are all contributing their crucial parts to some pretty big undertakings. The 6000 drawer pinned collection has been completely re-organised with all accessions consolidated to family, and expansion space included to accommodate planned project expansions within the collection.

Major works are well under way including “Australian Beetles Vol, 1, 2 & 3” (keys to genera, diagnosis, distribution and fauna lists), updates of checklists for the Australian Faunal Directory, molecular phylogenies, plant-weevil interactions and revisions of, or within; Cerambycidae, *Lepanus* (Scarabaeidae), Leiodidae, small tribes of Entiminae (Curculionidae), Rhipiceridae, Dascillidae, and parts of Coccinellidae, Ptilodactylidae, Trogossitidae, Boganiidae, Ciidae and Mycetophagidae – to name a few.

Gang members have hit the road to visit collections and collaborators in Germany, Spain, USA, UK, Paris, Czech Republic, Vienna, and New Zealand. The three post docs have presented their work at international conferences, one PhD is almost in and the other well under way with publications in review. Our “visiting scientists” and the many short term visitors are raising enthusiasm and increasing collaboration both nationally and internationally.

Other activities include some “serious” imaging (high resolution, high quality & serious quantity) for all of the above with some sophisticated digital imaging systems now housed within Coleoptera, some dabbling in advanced dissection techniques with a view to 3D imaging and CT scanning, investigation of iridescence, lecturing at ANU, development of interactive web based keys, digital illustration and some interpretation of fossil beetles and identifications for and by DAFF staff. Best of all this hive of activity involves a whole lot of mentoring, teaching and sharing of skills and knowledge in all areas of Coleoptera research.

ANIC Beetle Gang: From front left round to front right: Deb Jennings, Nicole Gunter, Adam Slipinksi, Kim Pullen, Thomas Wallenius, Zhenyu Jin, Graham Teakle, Robert Tompsett, Rolf Oberprieler, Cate Lemann, Hermes Escalona, Frank Tesseyman and Franz Grosbechler



Sara Pinzon-Navaro, Ben Boyd, Greg Fletcher, Tom Weir, Ainsley Seago, John Lawrence, Xingmin Wang

The Michael Pulvertaft Moth Collection

Ted Edwards and Marianne Horak

Michael Pulvertaft was born in Ireland in 1935 and grew up in England. He visited Australia as a Midshipman in the Royal Navy in 1955. In Sydney, at a cocktail party on board HMS Newcastle he met his future wife Ann. They were married and settled in England. He left the navy as a pilot and came to live in Australia in 1962.

Michael was appointed manager of Monier Pipe Company which took him to Wagga Wagga, where he brought up his family of three daughters, Caroline, Rosalind, and Belinda (Caz, Roz and Bin). He was a thoughtful man of wide interests. He was a very keen fly fisherman and part-owned a cabin at Talbingo, NSW where he and Ann spent much time fishing. He had arrived in Australia with a small collection of English butterflies and moths. As his family grew up he started collecting Australian moths, a passion which really blossomed when he semi-retired in 1987.

Michael and Ted at ANIC

He and his wife had bought a “shack” at Sunshine Beach, Qld and slowly rebuilt it themselves into a wonderful home, of intricate design to maximise the views overlooking a creek reserve and the sea. It won a prize from the Noosa council for home design and construction. In his active retirement he and Ann travelled widely, especially to northern and western Qld collecting moths and to Talbingo and the Great Lakes in Tasmania for fishing and moth collecting.

We first met Michael when he came to one of our early “moth weekends” and judging by the accurate identifications in his collection he made the most of several such visits. Michael died in 2012 leaving the collection to his daughters with instructions that it should be offered to the ANIC. Last October, with the indispensable aid of Caz and Roz, we packed the collection in a HiAce and transported it to Canberra.

The collection consists of 62 drawers in four single banked home-made cabinets. About a quarter is Australian butterflies and the remainder Australian macro-moths. Michael was aware of the drawer space that could be consumed by a moth collection and carefully restricted the collection to four specimens of each species which makes the amalgamation of his collection into the ANIC simple as it will easily fit into the space left for additions. His collection contains some unique specimens and many others that are poorly represented in the ANIC. We were aware of a few of these as Michael had consulted us about them but we have since discovered many others. There are several species new to us as well as a host of useful distribution records. The whole collection is beautifully housed, set and labelled and makes a very welcome and significant accession to the ANIC.

Caz, Marianne and Roz pack-up Michael’s collection

Michael in the outdoors

Making sense of old pests in a new era

Garry McDonald

While this may be of only passing anecdotal interest, I am a 20th century entomologist that lost my way into administration for 16 years, returning recently to entomology in mid-2012. I did spend 25 years in DPI undertaking pest management research, but that seems a long time ago. What is sort of fascinating to me now is how some of our science has changed so dramatically in a relatively short space of time (progress?). I'll return to that topic in a moment.

Sminthurus viridis

I undertake my research in Prof. Ary Hoffmann's fine lab at the University of Melbourne, in an excellent collaboration with CSIRO's Dr Sarina MacFadyen in the National Invertebrate Pest Initiative (NIPI). The project aims to explore the potential of statistical models to provide forecasts of the annual timing and severity of crop infestations of earth mites (*Haleotydeus destructor* and several Penthaleids) and the collembolan pest lucerne flea (*Sminthurus viridis*). The methods are straightforward enough: collate historic accounts of pest incidence (presence/absence/densities/damage intensity, etc.) over the past 60 years or so, use published biological attributes to establish hypotheses around phenology and population growth, and test these in multiple regression models against continental scale historic daily, gridded, meteorological data. As a scientist with strong leanings to field work, I begrudgingly acknowledge the ever growing role of modelling in advancing our knowledge; this would never have been possible 16 years ago!

Our project goals are most challenged by the need for temporally and spatially comprehensive, reasonably accurate historic records of pest occurrences across southern Australia. There are of course a handful of journal articles which summarise findings, and many more reports in the grey literature which provide qualitative accounts of pest occurrences. However, considering the vast amount of field work done on these pests over many decades, there are surprisingly few data sets that relate to the seasonality of these pests over the years. In my view, this points to an urgent need to look more seriously at how we archive raw data/information for generations of scientists to come.

In this respect, my recent visit to ANIC provided a timely reminder of the enormous value of this national resource/treasure, and its carers. Of course, there are diverse collections of mounted mites and fleas from over the years which tell their own story. The two additional ANIC assets that have proved to be invaluable are the curator of acarology, Dr Bruce Halliday, Australia's longstanding 'father' of mite taxonomy, and the extraordinarily comprehensive field notes of his predecessor, Dr MMH Wallace. Murray Wallace maintained and systematically filed impeccable records of all sites visited over decades, documenting the invertebrate communities at each site, many linking back to preserved specimens. The ongoing value to current and future ecological research of these thousands of records is impossible to quantify. However, in the meantime, a 2013 ecological modelling project gains momentum from specimens and records developed in the 1950s, curated and communicated by an increasingly rare specialist.

It's a privilege to have access to these resources and I truly hope that a similar calibre of resource remains at ANIC for the foreseeable future for old and new generation scientists.

Garry McDonald

Setting course presented by Ted Edwards

Debbie Jennings

In February, Ted Edwards presented a setting course to a small group of fortunate ANIC staff. The course included an incredibly informative set of notes with numerous tips that we familiarised ourselves with before the course. I would highly recommend reading the course notes as they are filled with interesting snippets, historical facts and handy tips.

Once we had covered the theory in the notes, Ted demonstrated with ease how to set a macro moth. He made it look so simple, but we knew that this was only because he was so experienced. Then it was our turn – we set up all our tools and equipment and chose our first moth. Well, after much muttering, mumbling and fumbling we had a selection of varying degrees of mangled moths. Following a few more attempts with macro moths of different shapes and sizes, our nerves had settled and we had shown some improvement.

We then progressed to micro moths – fortunately, we had larger micro moths as I suspect we would have struggled with the very small ones. Ted again ran a demonstration with all of us peering over his shoulder, trying to pick up any more tips that could assist us. I think we coped slightly better with setting the micro moths, but this may have been that we were now becoming seasoned experts under Ted's guidance!

On the final afternoon of the course, we covered some of the more unusual circumstances and special techniques used for different moths. For example, cossids are very greasy so they require special treatment that reduces the amount of grease produced while hesperiids have very strong flight muscles that have to be relaxed or cut before setting.

We would like to thank Ted for the wonderful opportunity to peek into Lepidoptera world and gain a few extra skills. It was an informative and highly enjoyable experience. THANK YOU TED!

Collection Management & Curation Column

Beth Mantle

We're pleased to announce that the ANIC website has received an total overhaul and facelift over the last six months. The update focused on archiving out-of-date news and information, creating links useful resources, and providing helpful information to visitors to the collection.

The site is currently divided into six sections. *About the ANIC* provides a description of the collection, a brief history of the collection's origins and some information about using the collection.

For information on permits, specimen records, holotypes, publications and a full curatorial list, visit the *Resources* link. Some of these links, such as the type list and bulk sample list, have downloadable documents and spreadsheets aimed at facilitating and supporting researchers and visitors to ANIC.

The *Research* link provides detailed information on the groups or areas of research that are currently active in ANIC.

The *Contribute* pages are dedicated to our enthusiastic army of volunteers and provides information on how interested folks can get involved in this program.

The *ANIC Staff* pages have been refreshed to highlight recent research activities and collaborations. We have included profiles on our technical staff, postdocs and honoraries so that it's easy to find information on the experts in the collection.

There is a front page link to the current *ANICdotes* newsletter, as well as an archive for previous issues and web form for anyone wishing to subscribe to the newsletter, which is produced twice a year.

As always, if you notice a missing or broken link, or would like us to provide us with feedback, please send an email to Beth Mantle. Finally, I would like to acknowledge Fiona Spier and Kim Pullen for their efforts in updating the website.

Digitisation Update

Beth Mantle

I recently re-curated and digitised the pinned Mecoptera collection, as part of a broader effort to digitise ANIC's orphan collections. ANIC's Mecoptera collection comprises 14 drawers of specimens. Most of the specimens represent the Australian scorpionfly families Bittacidae and Choristidae, with the remainder from the primitive Nannochoristidae and little-known Meropeidae (forcepflies). Additionally, there are two drawers of exotic Mecoptera, mainly from the continental United States.

The specimens were removed from cork-lined drawers and replaced into drawers with unit trays. Species names were checked against the Australian Faunal Directory Zoological Catalogue of Australia, and labels were updated accordingly. The drawers were scanned in the SatScan whole-drawer imaging system and the resulting images uploaded to an image library in ANIC's Flickr account: http://www.flickr.com/photos/anic_insects/

These images are best viewed at their maximum size, which can be done by clicking on the image, selecting "view all sizes", and then selecting "Original 4835x4877". ANIC's whole-drawer images are now being scanned with a colour strip to permit standardisation of colours on-screen. The Flickr images have been "machine-tagged" with relevant taxonomic information to enable them to be searchable through the Atlas of Living Australia (ALA). The holotype specimens held in the collection have just been databased and these records should soon be available through the ALA.

Flickr image of ANIC drawer of *Chorista australis* (http://www.flickr.com/photos/anic_insects/8078277078/in/set-72157631748291044/)

HYM training course

Nicole Fisher

I participated in the Hymenoptera course for 2012 at Tovetorp Zoological Research Station in Sweden from 5 to 12 August. It was attended by 28 participants (chosen from 45 who applied) from Sweden, Norway, Denmark, Germany, USA, France and myself from Australia.

In an intensive residential hymenoptera identification course, the main objective is to provide participants with knowledge and experience in identifying parasitic and predatory wasps, sawflies, wood wasps, bees, and ants. The course provided training on the natural history of wasps, bees, and ants, with information being reinforced with fieldwork.

At the conclusion of the course, I attended a one-day symposium entitled "Systematics and Biodiversity of Hymenoptera in Boreal Ecosystems". Most talks were based on the Swedish Malaise Trap Project (SMTP), a large scale, national insect inventory conducted by the Swedish Museum of Natural History and funded by the Swedish Taxonomy Initiative. The Swedish Taxonomy Initiative started in 2002 and was fully funded from 2005. It aims to completely chart the flora and fauna of Sweden within 20 years.

After departing Sweden I visited the British Natural History Museum (BMNH) in London. Spending time with colleague, Dr Vladimir Blagoderov from the Sackler Biodiversity Imaging Laboratory, to talk about digitisation of collections through the use of a SatScan™, machine. ANIC has one of the four prototype machines in existence. While at the imaging facility, I was fortunate to be able view the magnificent new Darwin 'Cocoon' Building, an 8-story-tall oblong interior structure that houses the museum's famous plant and insect collections. From within the cocoon, the public can observe the scientific staff working with machines to create high-quality images to share with colleagues around the globe.

Recent publications

Barratt, B.I.P., **Oberprieler, R.G.,** Barton, D.M., Mouna, M., Stevens, M., Alonzo-Zarazaga, M., Vink, C.J. and Ferguson, C.M. 2012. Could research in the native range, and non-target host range in Australia, have helped predict host range of the parasitoid *Microctonus aethiopoides* Loan (Hymenoptera: Braconidae), a biological control agent introduced for *Sitona discoideus* Gyllenhal (Coleoptera: Curculionidae) in New Zealand? *BioControl* 57: 735–750.

Buckman, R.S., **Mound, L.A.** and Whiting, M.F. 2013. Phylogeny of thrips (Insecta: Thysanoptera) based on five molecular loci. *Systematic Entomology* **38**: 123–133.

Castilho, R. C., de Moraes, G. J. and **Halliday, R. B**. 2012. Catalogue of the mite family Rhodacaridae Oudemans, with notes on the classification of the Rhodacaroidea (Acari: Mesostigmata). *Zootaxa*, **3471**, 1–69.

Ge, S.Q., Wipfler, B., Pohl, H., Hua, Y., **Ślipiński, A.,** Yang, X.K. and Beutel, R.G. The first complete 3D reconstruction of a spanish fly primary larva (*Lytta vesicatoria*, Meloidae, Coleoptera). PLOS ONE, 7(2): e52511.

Gilbert, J.D.J, **Mound, L.A.** and Simpson, S.J. 2012. Biology of a new species of socially parasitic thrips (Thysanoptera: Phlaeothripidae) inside *Dunatothrips* nests, with evolutionary implications for inquilinism in thrips. *Biological Journal of the Linnean Society* **107**: 112–122.

Halliday, B. 2012. A new complete checklist of the mites of Australia (Acari). *Myrmecia*, **48** (4), 34–35.

Jin, Z., **Ślipiński, A** and Pang, H. 2013. A revision of the genus *Notodascillus* Carter (Coleoptera: Dascillidae). Zootaxa, 3613: 245-256.

Joharchi, O., **Halliday, B.** and Beyzavi, G. 2013. A new species of the genus *Promacrolaelaps* (Acari: Laelapidae) associated with *Propomacrus bimucronatus* (Pallas) (Coleoptera: Scarabaeidae) in Iran. *Zootaxa* **3641**: 379-383.

Johnson, L., **Mantle, B.L.,** Gardner, J.L. and Blackwell, P.R.Y. 2013. Morphometric measurements of dragonfly wings: the accuracy of pinned, scanned and detached measurement methods, *ZooKeys* 276: 77–84.

Krosch, M.N., Schutze, M.K., Armstrong, K.F., Graham, G.C., **Yeates, D.K.** and A.R. Clarke 2012. A molecular phylogeny for the tribe Dacini (Diptera:Tephritidae): systematic and biogeographic implications. *Molecular Phylogenetics and Evolution*. 64: 513-523.

Lambkin, C.L., Sinclair, B.J., Pape, T., Courtney, G.W., Skevington, J.H., Meier, R., **Yeates, D.K.,** Blagoderov, V. and B.M. Wiegmann. 2013. The phylogenetic relationships among infraorders and superfamilies of Diptera based on morphological evidence. Systematic Entomology 38: 164-179.

Lessard, B.D. and **Yeates, D.K.** 2012. Anzomyia (Diptera: Tabanidae: Pangoninae: Scionini): a new genus of Australian and New Zealand horse fly, including the description of three new species. *Insect Systematics and Evolution* 43: 101-116.

Mapondera, T., Burgess, T., Matsuki, M., and **Oberprieler, R.G**. 2012. Molecular phylogenetics and identification of the cryptic species of the *Gonipterus scutellatus* complex (Coleoptera: Curculionidae: Gonipterini). *Australian Journal of Entomology* 51(3): 175–188.

Minaei, K., Haftbaradaran, F. and **Mound, L.A.** 2012. A new *Ankothrips* species (Thysanoptera: Melanthripidae) from Iran with unusually short setae. *Zootaxa* **3552**: 37–42.

Mound, L.A. 2012. The Natural History Museum revisited. *Antenna* 36(3): 195–200.

Mound, L.A., Masumoto, M. and Okajima, S. 2012. The Palaeotropical genus *Craspedothrips*, with new species from Africa and Malaysia (Thysanoptera, Thripinae). *Zootaxa* **3478**: 49–61.

Mound, L.A. and Tree, D.C. 2013. Australian spore-feeding thrips of the genus *Phaulothrips* (Thysanoptera, Idolothripinae). *Zootaxa* **3608(4)**: 239–252.

Mound, L.A. and Walker, A.K. 2012. The Australia-New Zealand connection re-visited, with two new species of *Cartomothrips* (Thysanoptera, Phalaeothripidae). *Zootaxa* **3487**: 58–64.

Nasruddin, A. and **Mound, L.A.** 2012. Seasonal abundance and biology of *Crotonothrips polyalthiae* (Thysanoptera: Phlaeothripidae), and its damage to a shade tree, *Polyalthia longifolia*. *Florida Entomologist* **95**: 610-616.

Nelson, L.A., Lambkin, C.L., Batterham, P. , Wallman, J.F., Dowton, M., Whiting, M.F., **Yeates, D.K.** and Cameron, S.L. 2012. Beyond barcoding: a mitochondrial genomics approach to molecular phylogenetics and diagnostics of blowflies (Diptera: Calliphoridae). *Gene* 511: 131-142.

Oberprieler, R.G. and Oberprieler, S. K. 2012. *Talbragarus averyi* gen. etsp. n., the first Jurassic weevil from the southern hemisphere (Coleoptera: Curculionoidea: Nemonychidae). *Zootaxa* 3478: 256–266.

Oberprieler, R.G. and Caldara, R. 2012. *Siraton devillei* Hustache (Coleoptera: Curculionidae), the mysterious weevil from the Isle of Elba: exiled no longer. *Zootaxa* 3573: 55–58.

Oberprieler, S.K., Rasnitsyn, A.P. and Brothers, D.J. 2012. The first wasps from the Upper Jurassic of Australia (Hymenoptera: Evanioidea, Praeaulacidae). *Zootaxa* 3503: 47–54.

Shattuck, S.O., Gunawardene, N.G. and Heterick, B. 2012. A revision of the ant genus Probolomyrmex (Hymenoptera: Formicidae: Proceratiinae) in Australia and Melanesia. Zootaxa 3444: 40–50.

Shattuck, S.O. and Slipinska, E. 2012. Revision of the Australian species of the ant genus Anochetus (Hymenoptera Formicidae). Zootaxa 3426, 1–28.

Ślipiński, A., Pang, H. and Booth, R. 2012. Revision of the Australian Coccinellidae (Coleoptera) Part 8. Genus *Scymnus* Kugellann. Annales Zoologici, 62: 679-704.

Robertson, J.A., **Ślipiński, A.,** Hiatt, K., Miller, K.B., Whiting, M.F. and McHugh, J.V. 2013. Molecules, morphology and minute hooded beetles: a phylogenetic study with implications for the evolution and classification of Corylophidae (Coleoptera: Cucujoidea). Systematic Entomology, 38: 209-232.

Wallenius, T., Peakall, R., Wanjura, W.J., Chyb, S. and **Oberprieler, R.G.** 2012. Volatile emissions, thermogenesis and dehiscence patterns of *Macrozamia communis* (Zamiaceae): implications for cycad pollination research. *Memoirs of the New York Botanical Garden* 106: 395–418 (*In*: Stevenson, D. W., Osborne, R., & Taylor Blake, A. S. (eds.). *Proceedings of Cycad 2008: The 8th International Congress on Cycad Biology, 13–15 January 2008, Panama City, Panama*).