ANICdotes

The official newsletter of the Australian National Insect Collection

CSIRO NATIONAL FACILITIES AND COLLECTIONS
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Our first issue for 2019

David Yeates, Director

Welcome to our 14th issue, marking seven years of ANICdotes!

This issue covers the very busy 2018/19 field season, and other activities over summer. We include an article on field work in South Africa on the way back from Namibia, where the fly contingent attended the 9th International Congress of Dipterology. In South Africa the group visited a cooler Fynbos environment at the southern tip of South Africa, as well as semi-desert landscape in the Cederberg Ranges north of Cape Town. We also have reports on field work in south western Tasmania and Cape York Peninsula, and Alice Wells reports on the search for a marine caddisfly at Broulee on the south coast of NSW with international visitor Paul Frandsen from Brigham Young University in Utah. The species was collected and its genome sequenced in a very short and productive visit. There is also an article on the ACT Bush Blitz survey of the Brindabella Ranges in November 2018, featuring the collecting efforts of Juanita Rodriguez, Olivia Evangelista, You Ning Su, Michael Braby and Luisa Teasdale.

In this issue we profile two new staff, Yun Li and Bronte Sinclair. Yun is working with Adam Ślipiński and Andreas Zwick on darkling beetles (Tenebrionidae). Bronte is providing collection and research support in the Diptera collection now that Alan Landford has retired. As this issue goes to press we are also appointing Thekla Pleines and Jaime Florez to Federica Turco's collection management group. More on Thekla and Jaime in the next issue.

David Yeates

Over the summer ANIC played a significant role in CSIRO's march in the Sydney Mardi Gras, and in our collaboration with the ANU School of Art and Design to bring an insect art exhibition to CSIRO Discovery. Our Mardi Gras article features Bryan Lessard, Luana Lins and Juanita Rodriguez in their winged costumes for the march!

We also have an article on our initiative to extract molecular data from the pinned collection through investments from the Environomics Future Science Platform. Andreas Zwick and his group are having success using high throughput sequencing to obtain mitochondrial genomes from the legs of pinned insects.

We delayed this issue by a few days to bring you the breaking news and photos from the 2019 ANIC volunteers BBQ held on the 27th March. The scheme turned 21 this year, and our volunteers provide very valuable horsepower for managing and developing the collection. Tom van Gerwen has been providing great continuity for our volunteers scheme, having managed it from the start.

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BANNER: *Graphium macleayanus* image: Biodiversity Heritage Library.

Welcome Yun Li and Bronte Sinclair

Cate Lemann and Deb Jennings

Yun Li

Yun Li (Living) is a new PhD student from China. His primary research interest is combining field, museum, genomics and statistical approaches to understand the processes underpinning biodiversity patterns.

Living is working with Adam Ślipiński and Andreas Zwick on the faunal evolution of Australian darkling beetles (Tenebrionidae). By reconstructing their evolutionary histories, Living will explore the processes driving their diversification and test which factors underpin their phyletic distinctiveness.

Before joining ANIC, Living completed his M.Sc. degree in Hong Pang's beetle lab and thereafter worked as a research assistant and assistant curator of the insect collection in the Museum of Biology, Sun Yat-sen University. His previous projects focused on the taxonomy and phylogeography of net-winged beetles (Lycidae).

Yun Li is working on Tenebrionidae with Adam Ślipiński and Andreas Zwick

Yun Li is a photographer and painter, as well as a reptile fanatic and birdwatcher. Living brings with us his passion for nature and looks forward to working with ANIC colleagues in multidisciplinary fields, from taxonomy to bioinformatics.

Bronte Sinclair

Bronte graduated from ANU in 2018 with a BSc, majoring in biology. She has previously been involved in research on fire regimes, native mammal physiology, and Wollemi Pine dendrochronology.

At ANIC she has been a part of the digitisation team and has worked on the Lepidoptera and Diptera FSP projects. She is now working as the interim Diptera technician, providing much needed support for the Diptera researchers and students.

Bronte Sinclair is currently working as the Diptera technician

Micro/Macro Exhibition

Cate Lemann

ANIC and the ANU's School of Art and Design have been collaborating for five years, with ANIC specimens being supplied as inspiration for art classes. This year saw the second successful art exhibition "Micro/Macro" in the CSIRO Discovery Link Gallery.

Six studio groups of ANU art students were let loose with beetles as inspiration and encouraged to "think big". After two Thursday sessions their results were amazing. Each group of students selected the pieces from their studio to go on exhibition, and 21 very large and diverse works were displayed in studio style for 3 weeks.

From the ANIC perspective it is fabulous to see insect biodiversity represented in new and wonderful ways and to have the ANIC specimens used and appreciated by a different audience. The exhibition was a great success and notably stirred visitors' thoughts and imaginations around insects and their role in our world.

Some examples of the artwork can be seen on page 12.

Micro/Macro exhibition in the Link Gallery

International Congress of Dipterology 2018 and Western Cape expedition

Keith Bayless and David Yeates

Keith Bayless, Bryan Lessard, James Lumbers, Xuankun Li and David Yeates attended the 9th International Congress of Dipterology 2018 in Namibia. We discussed flies with scientists from around the world at the Safari Convention Center in Windhoek, the capital of Namibia. The Congress was a great success in terms of sharing high-quality fly science done at the Australian National Insect Collection.

Keith co-organised the symposium "Advances in Diptera phylogenomics" including 12 speakers, and Bryan organised the symposium "Taxonomy and systematics of lower Brachycera" with 9 speakers. During the congress, Keith gave one keynote and two research presentations, Xuankun gave two oral presentations, and Bryan and David both gave one talk. James and Xuankun both presented posters concerning their research. Xuankun was awarded Second Prize for the Best Student Poster Award for his poster "Towards a Revision of the Bombyliinae (Bombyliidae) of Australia."

After the meeting, most of us took the chance to embark on a field expedition in Southwestern South Africa. James returned to Australia as his focal taxon does not occur in Africa. Andreas Zwick joined us hunting for moths. We visited De Hoop Nature Reserve along the coast in the far south, and Mt Ceder in the Cederbergs north of Cape Town, a much drier environment. The trip was a huge success, with many important taxa collected. A South African pollination researcher we met at the Congress from Stellenbosch University, Dr Alan Ellis, joined us in the Cederbergs to assist us in collecting South African pollinators, especially Bombyliidae and Nemestrinidae.

We collected material from the bee fly subfamilies Mariobezziinae, Oniromyiinae, Mythicomyiinae, Cythereinae and Tomomyzinae, along with other useful asiloid taxa such as Asilidae (Willistonininae), Therevidae (Xestomyzinae) and Mydidae. We collected long-tongued pollinators in the families Acroceridae and Nemestrinidae and *Philoliche* (Tabanidae). We also caught the unusual march flies *Rhigioglossa* (*Perisilvius*) and *Cydistomyia* (*Amanella*). We also got material of some important acalyptrate flies such as Chyromyidae: Aphaniosominae, Pyrgotidae: *Toxopyrgota* and Camillidae, and many Lepidoptera. A highly successful trip highlighted by beautiful scenic views of the Western Cape.

The Congress of Dipterology was held in Brisbane in 2002, and the 2022 Congress will be in California.

Philoliche sp. (Tabanidae) collected from De Hoop Nature Reserve, South Africa, with exceptionally long mouthparts

Keith Bayless, Bryan Lessard and Xuankun Li collecting in South Africa

Southwest Tasmania Reconnaissance 2019

Keith Bayless

If you divide Tasmania into quarters, the southwestern corner is almost entirely uninhabited. No towns or roads. Still, the area has a rich variety of ecosystems, from coastal rainforest to montane heath. It is safe to say that most flies in SW TAS have never been targeted by an expert.

This makes Southwest Tasmania, from Strahan to Strathgordon to Southport, an alluring region on which to focus Diptera collecting efforts. Though little is known in general, some intriguing discoveries have been made recently, for instance the southernmost example of the early-diverging gall midge subfamily Catotrichinae (Cecidomyiidae).

David Yeates and Keith Bayless embarked on a week-long trip focussing on the edges of southwest Tasmania to find the best avenue deep into the wilderness. The aim of the trip was to reconnoitre field sites to launch future intensive sampling of Diptera. In line with recent trips to Chile, New Zealand, and South Africa, relictual Diptera would be targeted to potentially illuminate ancient biogeographic connections throughout the Southern Hemisphere. A most likely environment that could favour novel or poorly sampled lineages is rainforest. When Australia was wetter, before *Eucalyptus* dominated, large swaths were clothed in the small dark leaves of southern beeches. The most extensive Australian rainforest with *Nothofagus* still prevails in Tasmania.

With the goal of finding rich, well preserved, accessible *Nothofagus* rainforest in order to collect flies, we started in the far south and moved progressively west. Some rainforest sites were in steep gullies or affected by wildfires or human activity. Fittingly, the first day included Recherché Bay, the site of the first scientific experiment performed in Australia. The taxa collected in the Far South generally had connections to groups that are widespread but rare in Australia, for instance Pseudopomyzidae

Keith Bayless collecting in Tasmania

and the parasitoid flies with modified antennae *Cryptochetum* (Cryptochetidae) and *Axinia* (Axiniidae).

The next destination was higher-elevation areas between Mt Field and Strathgordon. Forest types here changed dramatically depending on the orientation and inclination of the slopes, rapidly shifting between buttongrass heath, dry sclerophyll, wet sclerophyll and *Nothofagus* rainforest. Here we picked up some taxa with true southern connections, such as the exceptional scorpionfly *Nannochorista* (Nannochoristidae) at the base of Mount Wedge, and true flies including Helosciomyzidae, Teratomyzidae and cnemospathidine Heleomyzidae. Simon Grove from the Tasmanian Museum and Art Gallery accompanied us on this leg of the trip.

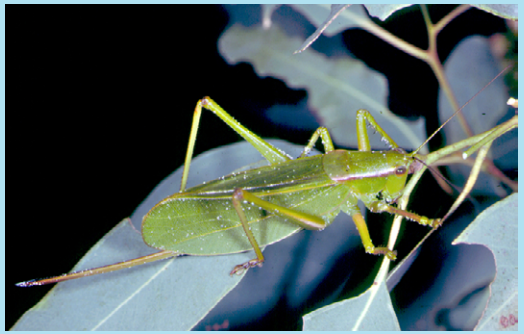
Soon afterwards we made our deepest incursion into the Southwest wilderness, driving into the rainforest along abandoned mining train line to the Bird River Track. A great deal of unspoiled rainforest exists along Macquarie Harbour between the Gordon River and Strahan, but accessibility is a major challenge. In far western Tasmania, occasional patches of flat lowland rainforest are naturally devoid of *Eucalyptus*, for instance at Corinna. Many of the species collected here were not otherwise encountered on the trip and deserve further scrutiny.

In 2020, a larger entomological expedition will be undertaken focusing on the far west of Tasmania. We hope that exerting collecting time and resources on these ancient forests to discover new flies will refine and expand our understanding of the evolutionary tree of Diptera.

"Why are insects dying in such numbers?"

A CSIROscope blog on a hot topic

The CSIRO blog is based on an article recently published in the *Good Weekend*, following a scientific debate on the decline of insect populations worldwide.



CSIROscope link Good Weekend link ScienceDirect link

Alkoomie

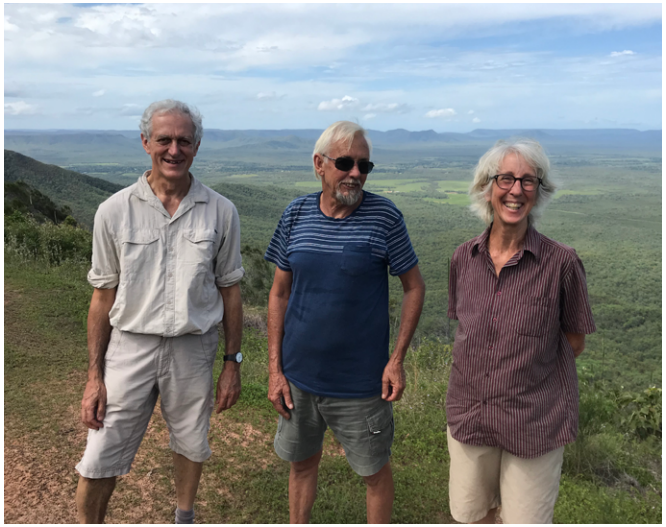
Ted Edwards

"We go up that road there" said John, indicating the escarpment ahead. Looking up I could only make out a rock fall and scree slope but John was right, it was the track, more vertical than level, an equal combination of drainage ridges and washouts.

"Head north of Cooktown", we had been told, "and take the Oakey Creek road and follow it to the locked gate. We'll meet you there." Bart and I had taken Bart's 4X4 Toyota Land Cruiser as advised, and did we need it!

We were there to visit Jan Carson and John Witheridge, who are the caretakers of Alkoomie. Jan is a very keen moth student with a wonderful new collection from Alkoomie Homestead and most keen to meet experienced lepidopterists.

Alkoomie is a South Endeavour Trust (SET) property of 18400 ha about 20 km west of Cooktown, and the homestead is on top of Mount Dickson on the Dickson Plateau, which rises to an altitude of 473 m. Reminiscent of Binna Burra, perched on top of Mount Roberts and commanding a panorama of the Numinbah Valley and the Gold Coast, Alkoomie looks out over the South Endeavour River to Cooktown, Mount Cook and the reef in the far distance, the silica dunes of Starke in the north and Black Mountain, the mountain of boulders, to the south. Alkoomie is one of four adjoining SET properties, South Endeavour to the north and Kings Plains and Caloola to the south. Together they encompass a vast area of the hinterland of Cooktown. The Trust manages the properties for nature conservation, and the directors are keen to facilitate biological work thereon. Alkoomie is an extraordinarily diverse property. On the plateau *Allocasuarina* and *Eucalyptus* dominate with *Xanthorrhoea*, *Grevillea*, *Lophostemon* and *Alphitonia*, some heathland and gallery forest and patches of rainforest on the sheltered slopes. Below is tropical tall-grass woodland. A special feature is an area of karst, the most northerly in Queensland, with caves,



Bart Hacobian, John Witheridge and Jan Carson at *Alkoomie*

towers and its own unique flora and fauna. Access to Alkoomie is by special permission.

The homestead was originally built and intended as a farm stay, but upkeep of the various access tracks eventually ruled that out and it was purchased by SET. We were feted there with extremely generous bush hospitality; we had our own rooms, clean sheets and an en-suite, which were a godsend after the time I had spent "roughing it" days earlier.

Jan is a graduate of Monash University in Zoology and Physical Geography, and has many years' experience running plant nurseries and a farm in the Hastings Valley in NSW, where she also developed an interest in rainforest plants and botanical illustration. She has collected butterflies and moths since childhood, an interest expanded after she met John on Cape York Peninsula. For the past few years she has also been compiling

Alkoomie homestead

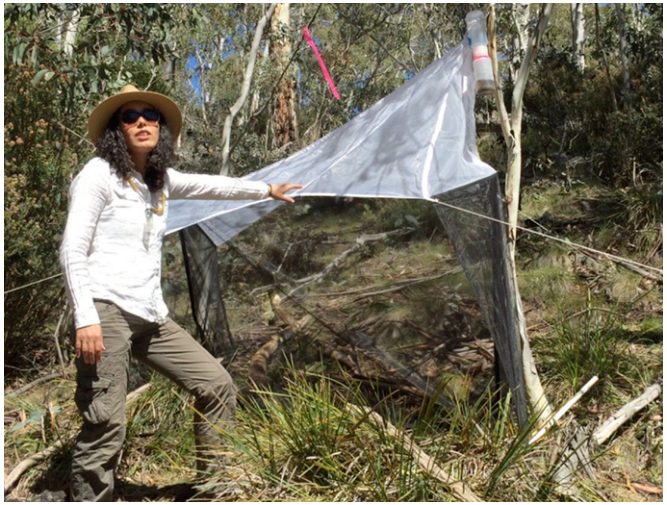
a photo-illustrated database of the invertebrate fauna of Sea Acres National Park in Port Macquarie as a volunteer.

We were the first moth collectors she had met, and we were able to assure her that she was doing a wonderful job and that her setting and tentative identifications were good. Outstanding in her collection was a fantastic new *Urocoma* (Erebidae: Lymantriinae) taken at the homestead. We all collected together during the night we stayed and we were flooded with moths although many were castor oil loopers (*Achaea janata,* Erebidae: Catocalinae), which may well have been migrating as they turned up on the Atherton Tableland a day later. Even so we had an exciting catch to pin next morning.

Special thanks Jan and John for their wonderful hospitality. We hope to visit Alkoomie again and to see them in Canberra before too long.

ACT Bush Blitz 2018

Juanita Rodriguez and Olivia Evangelista



Olivia Evangelista checking one of the malaise traps

Luisa Teasdale and Juanita Rodriguez collecting in the field

You Ning Su and Michael Braby at the Bush Blitz community day (ANBG)

Last November, ANIC participated in the ACT BushBlitz 2018 as a host institution. Luisa Teasdale, Michael Braby, Youning Su, Olivia Evangelista and Juanita Rodriguez joined the two-week expedition on behalf of ANIC. Other participants included the herpetology team from ANU and the Australian Museum, arachnologists from the Queensland Museum, hemiptera experts from the University of New South Wales, botanists from the ANH and aquatic-invertebrate ecologists from ACT and the Northern Territory.

Birrigai Outdoor School, an ACT Government centre for environmental education, served as the base for the Bush Blitz scientists and teachers. The school is strategically located near the Tidbinbilla Nature Reserve and provided easy access to the main areas of Tidbinbilla NR and Namadgi NP. Most sampling sites were within driving distance, and participants were able to reach more remote areas by helicopter.

The ANIC team used multiple techniques to sample insects, including active collecting, malaise and pan traps. Several sections of the national park were surveyed, such as the Lower Cotter catchment, Gibraltar Falls and the Orroral and Namadgi wilderness areas. In total, nine malaise traps were placed on different sites of the national park and have already yielded interesting results, such as a new species of spider wasp.

Throughout the sampling period, a group of teachers from all around Australia joined different teams of scientists and shared their experiences with their classrooms through a “virtual classroom” program. This was made possible through a partnership with Earthwatch Australia, which coordinates the Bush Blitz Teachlive Project. Olivia Evangelista got to answer some of the students’ questions through the virtual classroom.

Insect collecting was not only focused on the national park. A separate survey was conducted at the Parliament House gardens, where two malaise traps and various pan traps were placed and an entire day was devoted for active collecting.

Additionally, there were two community activities, a teacher open day at Birrigai, and a community day at the Australian National Botanic Gardens (ANBG), which was open to the public. During the teacher open day, we shared our love of nsects with ACT educators and showed them collecting methods and activities that could be applied to their curriculum. On the community day, ANIC had multiple insect displays and field collecting activities for the general public to engage in.

ANIC marches at Mardi Gras

Bryan Lessard

In March, Bryan, Luana and Juanita joined 50 other CSIRO LGBT+ and allied staff to march for the first time at the Sydney Gay and Lesbian Mardi Gras. The theme was “diversity in our DNA”, celebrating both the diversity of the organisation’s science and staff. “Just how biodiversity is important for maintaining a healthy environment, diversity is essential for a healthy workplace” says Bryan. A recent study showed that LGBT+ undergraduate students are more likely to drop out of a STEM degree, so it was fantastic to see CSIRO get involved at the Mardi Gras and inspire the next generation of LGBT+ entomologists and scientists.

CSIRO CEO Larry Marshall dropped by to show his support for the staff and Bryan was interviewed live on SBS television during the March with Juanita and Luana dancing in background. Here are some of the fabulous outfits that our proud staff strutted their stuff in during the March, complete with LED wings!

The marine caddisfly *Philanisus plebeius*

Alice Wells

Paul Frandsen from Brigham Young University visited Canberra expressly to collect specimens of the enigmatic marine caddisfly, *Philanisus plebeius* and to undertake procedures to characterise its genome.

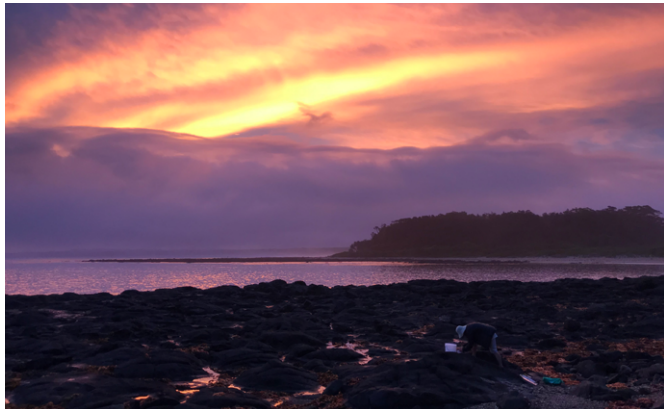
His project involved collaboration with CSIRO and ANU personnel. This caddisfly generally constructs its silken tube case out of coralline algae and other materials found in tidal pools. It is one of a small number of insect species that are truly marine (i.e. spend a life stage completely submerged in salt water).

While he was here, Paul visited nearby Broulee Beach with Alice Wells (CSIRO) and Rob Lanfear (ANU), and despite some difficult weather, collecting was successful. Some specimens were processed at Broulee and others were brought back alive to Canberra.

Operating in CSIRO facilities shared by the Andreas Zwick team and other facilities provided at ANU by Rob Lanfear, the team flash-froze the specimens into liquid nitrogen and, in the space of a few days, the high-molecular-weight DNA was extracted, Nanopore sequencing libraries were prepared, and the genome was sequenced.

By comparing the genome of *Philanisus plebeius* with genomes from other, closely related caddisflies, the team hopes to learn more about the genomic changes required for an insect to make the rare transition from a freshwater to marine environment.

The larva of the marine caddisfly, *Philanisus plebeius*, lives in tidal pools and constructs its case using silk and fragments of red coralline algae. [Image: Christine Frandsen]



As the storm clouds recede over Broulee Beach, Alice Wells, Paul Frandsen and Rob Lanfear set lights to trap the adults of the marine caddisfly. [Image: Paul Frandsen]

Visitors in the Coleoptera Hall

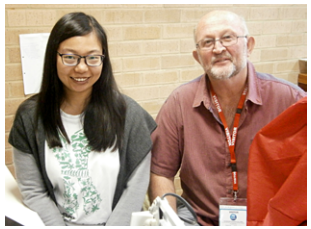
Sarah Leeson visited from The University of Western Australia in Perth, researching population genetics in Australia's introduced dung beetles

John Forrester Clack, ANU School of Art, collecting specimens for display and use as inspiration for Art classes

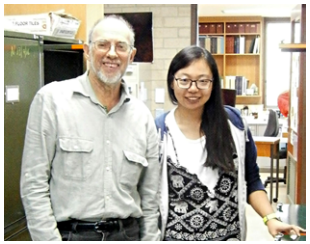
Chris Reid, Australian Museum, curated *Lamprima* (Lucanidae) to match recent publications

Natalia Medeiros de Souza (Sunshine Coast University) working with Rolf Oberprieler on *Gonipterus* (Eucalyptus weevil) identifications

Lesley Ballantyne planning the next Lampyridae project



Roger De Keyzer visited again for Cerambycidae collaboration with Mengjie and Lauren, with a little Lucanidae fun on the side



Allen Sundholm and Mengjie looking at Cerambycidae and helping to sort Buprestidae

Ricardo Bejsak checking identifications of Tenebrionidae, Carabidae and a range of other families

Nicholas Porch (Deakin University) fossicking for Driscoll specimens and general collaboration discussions; David Maddison (Oregon State Uni) exploring the Australian Carabidae collection and general collaboration around amber work

Prof Hong Pang, Sun Yat-sen University, finalising *Rodolia* work with Adam Ślipiński and working with Sun Yat-sen students

David Cantrill from the Royal Botanical Gardensin Melbourne collaborating with Michael Frese (University of Canberra and CSIRO) on new fossils from a site near Gulgong, NSW – exceptionally preserved insects and plants from the Eocene/ Miocene

Andras Szito, WA Dept Primary Industries and Rural Development, collaborating on Dermestidae with Adam and Lingzi, and scarabs with Tom

Andreas Urban and Cezary Rojewski visiting to compare specimens and confirm identifications in a range of taxa

Devi Stuart-Fox, Lu-Yi Wang and Laura Bibiana Ospina, Melbourne University, selecting specimens for colour analysis and imaging

Mary Finlay-Doney, NT DPINT, isiting for further collaborative work on Epilachini (Coccinellidae)

Molecular data - unlocking new information

Nicole Fisher

Mobilising collections through genomics

The Australian National Insect Collection (ANIC) has been involved in a CSIRO Future Science Platform (FSP) project on High Throughput Collection Genomics.

The goals are to develop workflows to mobilise the genomic information locked in the 15 million specimens that make up the National Research Collections Australia. We have been focusing on: reducing costs per sample, building capacity to generate whole-mitochondrial-genome data for an average of 200 specimens per day, automating the stages from sample to analysis result, and reducing the risk of contamination.

With the help of Marianne Horak, Ted Edwards (both Lepidoptera Honorary fellows) and Andreas Zwick, 1729 moth specimens of the families Tortricidae, Castniidae and Anthelidae were chosen. These specimens represent almost all named and unnamed species in ANIC (some replicates for comparison) and an assortment of different specimen ages dating back to about 100 years. Each moth was taxonomically verified for identification before digitising and tissue sampling.

Examples of moths chosen for tissue sampling

Workflows for combining digitisation and tissue sampling

We developed workflows for combining digitisation and tissue sampling, a task not routinely performed in ANIC. Identified moth samples are placed in separate unit trays with names from the Australian Faunal Directory (AFD) as part of a pre-digitisation curation step. Then follows a series of steps: labels taken off each specimen, labels and specimen photographed, a leg taken off with sterile forceps, leg placed and capped in tissue plate ready for DNA extraction, label images sent to DigiVol for transcription of label information and lastly integration of data from DigiVol with the DNA extraction data into the ANIC database.

The workflows and procedures we developed are already yielding significant cost and time reductions in the processing of ANIC specimens for digitisation and tissue sampling, and we expect that further efficiencies will be realised upon full implementation.

Bronte Sinclair hard at work imaging and removing legs for tissue sampling of moths in ANIC

VOLUNTEERS BBQ 2019

On the 27th March, we celebrated the work of the wonderful volunteers who provide such valuable assistance and camaraderie in the ANIC.

Recent publications

Anjos, A., Paladini, A., **Evangelista, O.**, & Cabral-de-Mello, D.C. (2018) Insights into chromosomal evolution of Cicadomorpha using fluorochrome staining and mapping 18S rRNA and H3 histone genes. *Journal of Zoological Systematics and Evolutionary Research*, 2018, 1–9. https://doi.org/10.1111/jzs.12254

Braby, M.F. (2018a) Threatened species conservation of invertebrates in Australia: an overview. *Austral Entomology,* 57, 173–181. https://doi.org/10.1111/aen.12324

Braby, M.F. (2018b) Are taxonomic publications involving nomenclatural acts on Early View Code compliant? *Austral Entomology,* 57, 371–376. https://doi.org/10.1111/aen.12372

Braby, M.F. (2018c) Curious Kids: Do butterflies remember being caterpillars? *The Conversation,* https://theconversation.com/curious-kids-do-butterflies-remember-being-caterpillars-99508

Braby, M.F. & Armstrong, J.J. (2018) Observations on the ecology of the Silky Hairstreak *Pseudalmenus chlorinda* (Blanchard, 1848) (Lepidoptera: Lycaenidae). *The Australian Entomologist,* 45 (2), 133–138.

Braby, M.F., Franklin, D.C., Bisa, D.E., Williams, M.R., Williams, A.A.E. Bishop, C. and Coppen, R.A.M. (2018) *Atlas of Butterflies and Diurnal Moths in the Monsoon Tropics of Northern Australia*. ANU Press, Canberra, xxxii+430 pp. http://doi.org/10.22459/ABDM.12.2018

Braby, M.F. & Hsu, Y-F. (2019) Range extension for *Anthene seltuttus* (Röber, 1886) (Lepidoptera: Lycaenidae) in northeastern Australia. *The Australian Entomologist*, 46, 23-26.

Braby, M.F. & Sands, D.P.A. (2019) Correction to the nomenclature of the larval food plant for *Hypochrysops cyane* (Waterhouse & Lyell, 1914) (Lepidoptera: Lycaenidae) in southeastern Queensland. *The Australian Entomologist*, 46, 27-28.

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Cai, C., **Lawrence, J.F.**, Yamamoto, S., Leschen, R.A., Newton, A.F., **Ślipiński. A.**, Yin, Z., Huang, D. & Engel, M.S. (2019) Basal polyphagan beetles in mid-Cretaceous amber from Myanmar: biogeographic implications and long-term morphological stasis. *Proceedings of the Royal Society B*, 286, 20182175. http://dx.doi.org/10.1098/rspb.2018.2175

Clark, D. J., Limaye, A., McKenna, D. D., & **Oberprieler, R. G.** (2018) The weevil fauna preserved in Burmese amber – snapshot of a unique, extinct lineage (Coleoptera: Curculionoidea). *Diversity*, 11 (1), 1, 1–219, figs. 1–91. https://doi.org/10.3390/d11010001

Clarke, D. J., & **Oberprieler, R. G.** (2019) Replacement names for *Elwoodius* Clarke & Oberprieler and *Platychirus* Clarke & Oberprieler (Coleoptera: Curculionoidea: Mesophyletidae). *Diversity*, 11 (2), 16, 1–2. https://doi.org/10.3390/d11020016

Deng, C., Zhou, Y.L., **Ślipiński, A.**, Ren, D. & Pang, H. (2019) The first wounded-tree beetle (Coleoptera: Nosodendridae) from Cretaceous Burmese amber. *Cretaceous Research*, 93, 211–215. https://doi.org/10.1016/j.cretres.2018.09.019

Derne, B.T., Hutchinson, M.N., Weinstein, P., Gardner, M.G. & **Halliday, R.B.** (2018) Parasite in peril? A new species of mite in the genus *Ophiomegistus* Banks (Acari: Paramegistidae) on an endangered host, the pygmy bluetongue lizard *Tiliqua adelaidensis* (Peters) (Squamata: Scincidae). *Austral Ecology*, https://doi.org/10.1111/aec.12692

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MICRO/MACRO artwork (article on page 2)