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ANICdotes for contact and subscriptions: [the ANICdotes home page](#)

BANNER: *Graphium macleayanus* image: [Biodiversity Heritage Library](#)

## The pandemic response issue

David Yeates, Director

We compile this issue as the dumpster fire of a year from hell lurches through its final few months. Usually a vibrant community for entomologists from all over Australia and the world, ANIC has been an eerily quiet place during the depths of the pandemic. All our Volunteers, Honorary Fellows, Visiting Scientists and Postgraduate Students were asked to stay home. Visitors were not permitted. Under CSIRO's COVID response planning, many of our staff worked from home. All our international trips were postponed, including the International Congress of Entomology in Helsinki in July. This has caused some delay to research progress, as primary types held in overseas institutions could not be examined and species identities could not be confirmed.

All that being said, the year gave us time for reflection and reassessment, research continued and some long-postponed curatorial activities came to the top of the priority list. Planning for the new building to house the collection continued apace, and, all going to plan, we expect to be moving in late 2023. This is very soon when you think of moving 12 million specimens from a place they have been since the 1980's. The move has given us an opportunity to think of more optimal workflow solutions, improve methods for the storage of the ethanol, pinned and slide collections, and conduct a forensic audit of our 22,000 or so types. More about this in forthcoming issues.

This Issue contains articles about three very exciting achievements. First, the High Throughput Genomics team lead by Andreas Zwick has won this year's Breakthrough Innovation

Award from our CSIRO Business Unit, Digital National Facilities and Collections. These awards are always heavily contested, not least because we are always competing against an army of very compelling entries from the astronomers in DNFC. Congratulations to Andreas and the team. The second significant achievement is the publication of Australian Weevils Volume 4, focussing on the broad-nosed weevils of the subfamily



David Yeates

Entiminae. This is a very significant evolutionary radiation of weevils in Australia. Rolf Oberprieler has been labouring on this work for many years, ably assisted by Debbie Jennings and Kim Pullen. Both now are immortalised with weevil genera named after them in the volume. The third significant achievement, and of significant labour, is the birth of a baby boy, Nicholas, to Luana Lins and her husband Patrick in June. Their lives will be enriched forever.

This issue also includes news of new postgraduate students, donations of significant collections of butterflies and nematodes, artificial intelligence used to analyse fruit fly geographic variation, and an obituary for John Dugdale, a great friend of ANIC and former lepidopterist with Landcare Research in New Zealand.

Finally, we all hope that 2021 brings some light at the end of the pandemic tunnel.

## Welcome to new staff

### Introduction to Madalene Giannotta and Braxton Jones

#### Madalene Giannotta

Madalene graduated from the University of Adelaide with a BSc (Hons) in Evolutionary Biology in 2018. Her honours thesis, supervised by Prof. Andy Austin, Dr Seraina Klopstein, and Dr Erinn Fagan-Jeffries, focused on the systematics and ecology of Australian labenine Darwin wasps (Hymenoptera; Ichneumonidae; Labeninae). Her project resulted in the



Madalene Giannotta (left) is undertaking a PhD on the Australian mutillids

description of two new species from the Australian-endemic genus: *Ozlabium*, and a significant expansion in the known host-associations and recorded distribution of labenine parasitoids.

Madalene joined ANIC's Hymenoptera lab in August 2020 to commence her PhD on the poorly-studied Australian Mutillidae (Velvet Ants) – a charismatic wasp family that is known to form large Müllerian mimicry complexes. Co-supervised by Dr Juanita Rodriguez and Prof. Craig Moritz, Madalene's PhD thesis will examine the systematics, ancient biogeography, and evolutionary drivers of mimicry in the Australian mutillid fauna.

#### Braxton Jones

Braxton started his PhD at the University of Sydney in 2020 after completing a Master of Research at Macquarie University in 2020. Braxton studies the evolution, taxonomy, morphometrics, and behaviour of stick and leaf insects (Phasmatodea). For his Master's degree he studied the peppermint stick insect (*Megacrania batesii*) from the Daintree Rainforest (Queensland). He investigated its chemical defence behaviour in the context of 'escape theory'. This research highlighted how these insects are more likely to use their chemical defence when they are further away from their refuge.

Braxton received a scholarship from the University of Sydney to study for a PhD and also a CSIRO Postgraduate Research Supplementary Scholarship. He is now working with Nathan Lo, David Yeates, and Simon Ho to investigate the different dispersal mechanisms that phasmids use throughout the world. His PhD will use high-throughput sequencing and comparative phylogenetic methods to address questions relating to reproductive trade-off, reduced dispersal ability, and a variety of dispersal hypotheses in a range of phasmatodean genera. These methods will also help determine the timeframe of stick insect evolution. He

also intends to conduct taxonomic revisions where necessary using phylogenies based on sequence data from mitochondrial genomes and nuclear genes. Braxton is also investigating phasmid eggs using biomechanical and morphological methods to evaluate dispersal hypotheses, dispersal reduction and egg investment strategies. Braxton's work will rely on ANIC's extensive stick insect collection, and our expertise in digitisation and collection genomics.



Braxton Jones is undertaking a PhD on phasmid phylogeny



## ANIC wins DNFC 2020 award

David Yeates

The ANIC High Throughput Genomics team won the 2020 Breakthrough Innovation Award from our CSIRO Business Unit, Digital National Facilities and Collections. The team was led by our phylogenomics research scientist, Andreas Zwick, and included ANIC staff James Nicholls, Diana Hartley and Vidushi Patel. The project is a key program of the Environomics Future Science Platform. The team has developed a game-changing technology platform for generating mitochondrial genomes from biological specimens. The platform is capable of quickly sequencing highly degraded DNA from vast numbers of collection specimens across all kingdoms of life and, through miniaturisation of reactions, delivering a 93% cost reduction for reagents.

### The challenge

DNA-based identification of organisms has revolutionised both biosecurity and biodiversity science because of its high speed and accuracy. DNA identification relies on interrogating a library of DNA sequences derived from specimens identified by experts. Regrettably, reference sequences aren't available for most species. In part this reflects the relative novelty of DNA technologies, but two more significant impediments are: 1) the lack of a universal system for generating these sequences for all life forms, meaning each group requires bespoke treatment; and 2) the DNA in most specimens held in collections is degraded because it wasn't collected with DNA analysis in mind, making DNA sequencing challenging.

### Achievement of this team

This breakthrough will revolutionise how biological collections are used, and has the potential to significantly improve the effectiveness of biomonitoring globally. The core piece of infrastructure for the project that allowed the team to increase throughput and decrease reaction volumes (therefore costs), is the newly-installed robotic acoustic liquid handler in the molecular lab. Using a "genome-skimming" approach delivers DNA barcodes (and many more sequences) from any kind of biological specimen (insects, mammals, fungi, plants, birds,

algae) at a fraction of the cost of conventional approaches and has a very low failure rate. The degradation of specimens is not a problem for genome skimming. In fact, it's been used to advantage and makes the method even more efficient.

Congratulations to Andreas and the team!




The ANIC High Throughput Genomics team: (Left to right) Andreas Zwick, Vidushi Patel, James Nicholls and Di Hartley. (Inset) Stephen Bent-tree

## Marvel flies a media hit

David Yeates

The July announcement of 165 new species named by CSIRO collections staff in the past year created a big splash in the media. The story featured flies named after the creator of the Marvel comic series, Stan Lee, and some of his cartoon characters, Deadpool (*Humorolethalis*, images on page 9), Thor, Loki and Black Widow. These cartoons have recently been made into a series of blockbusting movies. CSIRO's media staff estimate the story had a reach of over 120 million around the world, with widespread domestic coverage on ABC TV, radio and online, The Project, Today Show, WIN, News Ltd and Fairfax papers and Gizmodo. The news also received extensive international media coverage on BBC online, The New York Post, CNN, Fox News and others.

Media coverage featured two of our early-career researchers, the seasoned media performer Bryan Lessard (@BryTheFlyGuy), who gave live TV interviews on the ABC and the BBC, and Isabella Robinson, the lead author on the paper describing the flies (Robinson et al. 2020). The social media coverage was extensive, with Ryan Reynolds (the Deadpool actor) sharing the story on Instagram with more than 39 million followers, and the Deadpool creator, Rob Liefeld, thanking Isabella from his Twitter and Instagram accounts with over 300,000 followers.



Media announcement of 165 new species named by CSIRO during the 2019-20 financial year, featuring flies named after Stan Lee, Deadpool, Thor, Loki and Black Widow.

Promoted our biodiversity activities with estimate reach of 120+ million through traditional media and 40+ million through social media. NOTE: Evaluation is ongoing.

Overwhelmingly positive media coverage reached a national audience of nearly 4 million. Widespread domestic coverage inc. ABC TV, radio and online, The Project, Today Show, WIN, News Ltd and Fairfax papers, Gizmodo. Extensive international coverage, including live cross with BBC Global News (112 million+ reach), BBC online, New York Post, CNN, Fox News, and others.

Showcased four CSIRO researchers including three early career researchers and also ensured gender diversity with our spokespeople.

Screenshot 2020-09-24 at 3:41pm

## Australian Weevils Volume IV published

Rolf Oberprieler

Rolf Oberprieler and the late Elwood Zimmerman (Zimmie) have just published another volume in the *Australian Weevils* monograph series, which Zimmie had started to work towards when he came to Australia and the ANIC in 1973. By 1994 he had published five volumes of the series, two of them (Volumes V and VI) containing colour plates of most Australian weevil genera and the other three (Volumes I–III) the text of the smaller, primitive weevil families Nemonychidae (the chapter written by the late Willy Kuschel of New Zealand), Anthribidae, Belidae, Attelabidae, Caridae and Brentidae and three smaller groups of the family Curculionidae, together with a chapter

on immature stages (written by the late Brenda May of New Zealand) and an extensive list of Literature Consulted. These three text volumes cover about 1000 species, almost 25 % of the number of described weevils in Australia.

The new volume (Volume IV) introduces the large and taxonomically very difficult subfamily Entiminae of Curculionidae, the so-called “broad-nosed” weevils, which number more than 700 described species in Australia and more than twice as many undescribed ones, together more than all terrestrial vertebrates in the country combined. The subfamily is distributed throughout Australia, from the tropical north across the central deserts to Tasmania and even to the subantarctic islands in the Indian Ocean. It includes many of the economically important weevil species in the country, including several that were accidentally introduced from Europe, South America and Africa a century or more ago. The native fauna of Entiminae includes species with spectacularly modified heads and snouts, and several are known only from their original collection 100 years or so ago. Entimines represent the major weevil diversification in *Acacia*-dominated regions of arid Australia.

*Australian Weevils* Volume IV presents an introduction to the Entiminae, an overview of the salient morphological features of the subfamily (illustrated on 18 colour plates of diagnostic structures and characters), an identification key to the 12 tribes occurring in Australia and a systematic treatment of the 11 smaller tribes, which comprise about half the total fauna of Entiminae in the country. This treatment includes updated concepts and diagnoses of the tribes, keys to their genera and species and summarising accounts of the taxonomy, nomenclature, distribution and known hostplants of all the described genera and species.

All the introduced species, most of which are regarded as agricultural or horticultural pests, are included in this volume, as are descriptions of twelve new genera and eight new species and identifications of about another 240 undescribed species.

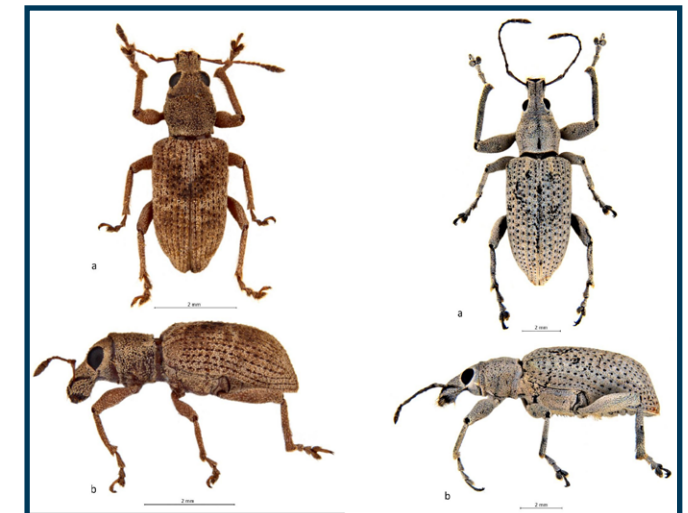
The dorsal and lateral habitus and genitalia of all genera and of several other species and their diagnostic characters are illustrated on a further 180 colour plates. The volume also includes an obituary and full publication list of the late Elwood Zimmerman and an updated list of recent literature on the Australian Entiminae and other weevils.

The taxonomic coverage of the volume is mainly aimed at Australian researchers and students who deal with entimine weevils in their work, but the updated tribal concepts and diagnoses and the generic classification will also be of use to researchers in other parts of the world where the eleven tribes that are covered occur.

The research to complete and write this volume took many years of hard work, and it would not have been possible without the able assistance of in particular Debbie Jennings but also Kim Pullen. With the new genera *Jenningsius* and *Pullenius* described in this volume, Debbie and Kim are now immortalised in the weevil world!



Rolf Oberprieler with the *Australian Weevils* Volume IV



New genera *Jenningsius* (left) and *Pullenius* (right) named after Debbie Jennings and Kim Pullen



## Donations: Phillip Sawyer Collection

Bronwyn Sawyer, De'Arne Priest and Ted Edwards

Phillip Francis Sawyer was born in Terang near Mortlake, Victoria, on the 23<sup>rd</sup> of March 1935 as the first of five children. His parents were dairy farmers and Phillip's childhood was spent on the dairy farm, which he loved. Nevertheless he decided to become a primary school teacher. He married Marina Olga Pappas, a trainee nurse, in December 1958 and settled in Terang. Altogether they had five girls, Anne-Maree, De'Arne, Bronwyn, Francine and Phillipa.

Phillip became interested in butterflies in the early 1960s when he first caught a butterfly in Bendigo, and his interest was further sparked when he completed a unit in Zoology as part of his Bachelor of Education.

In 1968 Phillip took his wife and the then three small children to Wabag in Enga Province, north-western Papua New Guinea. Phillip took up a position in the primary school there and developed a great love for the people and the country. His interest in butterflies and insects became a hobby and a passion whilst in Papua New Guinea, and he spent many of his weekends pursuing it; along with one or all of his three older daughters, who were equally passionate collectors. Many a happy family outing was a picnic out in the remote forest, butterfly nets in tow.

The family moved on to further teaching positions: Wapenamanda (Enga Province), Magitu (Eastern Highlands), Lae (Morobe Province), and Alotou (Milne Bay Province). In the three years Phillip spent in Lae as a school inspector he flew out to very remote provinces to inspect primary schools. He rarely missed an opportunity to add to his butterfly and insect collection when travelling to these remote places.

One of the most memorable butterfly experiences for Phillip was on 19<sup>th</sup> January 1975 at the Markam River near Lae, when his nine-year-old daughter, Bronwyn, discovered a pair of birdwing

butterflies mating. She was familiar with the species and knew that this Papilionidae was actually two different species mating and therefore most unusual. After initially doubting Bronwyn's observation, Phillip finally caught the female after chasing it up and down an embankment for thirty minutes. This was the first recorded, and only natural, intergeneric pairing between a female *Ornithoptera priamus poseidon* and a male *Troides oblongomaculatus papuensis*. The resulting eggs fortunately managed to produce two butterflies, one of which has been in the ANIC for several decades. Don Sands and Phillip wrote a paper about this hybrid butterfly.



Phillip Sawyer

One of Phillip's favourite places was Kassam Pass, which connects the Markham Valley to the Highlands region in the Eastern Highlands. He often reminisces with passion about this area as being one of the best places to catch *Delias*. During his time in the Eastern Highlands he caught a new species (Pieridae), *Delias sawyeri*. If you ask him what his favourite butterfly group is, he would always say it was the *Delias*. *Delias sawyeri* van Mastrigt, 2000 belongs in the *D. clathrata* group of species and was described from Mt Nose, Poketamanda, Enga Province, where it was collected on 15 July 1968. The holotype came to the ANIC via the Gerrits collection.

He finally returned to Victoria in 1976, eventually settling in Sunbury in Melbourne for the next 43 years. Phillip's love of PNG and the people never left him, and he returned in 1995 to take up a position for two years with Foreign Aid Abroad at the Kokopo Teacher's College in Rabaul. Phillip collected and collaborated with a number of renowned butterfly collectors while he was in PNG and formed lasting friendships with many of them. Don Sands and Ray Straatman are two which come to mind. He stayed in communication with many of them after he returned to Australia. During his retirement Phillip spent many hours on his butterflies and insects, painting with oils, playing golf and reading.

Phillip and his family are delighted that the results of his lifelong passion have found a home in the ANIC, where they will be looked after, respected and appreciated for years to come. Thanks to Michael Braby and You Ning Su for their effort and skill in transporting the collection to Canberra.

The foregoing is a condensation of a delightful and detailed essay about their Dad generously provided by Bronwyn Sawyer and De'Arne Priest.

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The Sawyer collection consists of nine cabinets with 90 drawers altogether. There are 69 drawers of butterflies, 15 drawers of beetles, three drawers of orthopteroids and three of miscellaneous other insects. There are 2465 butterflies and moths and 1146 beetles. The butterflies include 12 drawers of *Delias* totalling 590 specimens. There is a drawer of spectacular day-flying *Milionia* moths (Geometridae) and a drawer of hawkmoths. The collection is in excellent condition.

There are several highlights. On the basis of Phillip's observations and rearing, Ray Straatman subsequently artificially paired a male *Troides oblongomaculatus papuensis* with a female *Ornithoptera priamus poseidon* and one of the progeny ended up in ANIC via Don Sands, with both parents of the cross. Phillip's second specimen complements the series of the reared natural hybrid. There are also specimens of *Phyliris* (Lycaenidae), which Don Sands is anxious to examine when the COVID-19 restrictions are lifted. Philip often collected with Don Sands out of Lae and so the collection is rich in the difficult-to-collect Luciini (Lycaenidae). There are also two female *Artipe grandis* (Lycaenidae) not previously represented in the ANIC. Further exciting species and other gems will undoubtedly appear as the collection is examined more closely.

The Lepidopterists earnestly and gratefully thank Phillip and his family for this wonderful donation which, added to the Brandt, Gerrits and Gotts collections, significantly increases our ability to support scientific work on New Guinean butterflies.



Intergeneric hybrid (Photo by You Ning Su)

## The Waite Institute nematodes come to ANIC

Mike Hodda

Over the past few months, the Waite Institute Nematode Collection has been transferred to ANIC. The Waite Institute—a campus of The University of Adelaide—was one of three large collections of terrestrial and freshwater nematodes in Australia, the others being the Queensland Museum and the ANIC. Dr Kerrie Davies, the curator of the collection, retired in December 2019, and with no clear plan for who would look after the collection following her departure, the decision was taken to transfer it to ANIC, which is currently the only active collection in Australia. As a result of the donation, the ANIC now holds about 60% of all nematode collections in the country.

The Waite collection consisted of nearly 20,000 slides containing around 200,000 specimens, collected over the last 60 years by many eminent nematologists, including John Fisher, Frances Reay, Jackie Nobbs and Kerrie Davies herself. It is particularly strong in Criconematidae (the plant parasites known as Ring Nematodes), Fergusobiidae (Fly Gall Nematodes) and Aphelenchoidoididae (particularly the genus *Schistonchus* or Fig Nematodes). There are many nematodes associated with eucalypts and from arid regions. These collections complement ANIC's extensive holdings of nematodes from agricultural areas, moist forests, fresh waters and coastal marine habitats. The ANIC nematode holdings are further complemented by the extensive holdings of vertebrate-parasitic nematodes held in CSIRO's Australian National Wildlife Collection.

As is the norm for nematodes, many specimens in the Waite Collection belong to undescribed species. Nevertheless, these provide some idea of the tremendous diversity of nematodes and are a baseline resource for monitoring changes to the soil biota, of which nematodes are a major part. The Waite Collection did not include primary types as most had already been transferred to ANIC.

As the collection has come in over several months, the slides have all been checked and databased by recently-appointed nematode technician Manda Khudhir, whose profile appeared in a previous issue of ANICdotes. This has been a major effort to ensure that as much data as possible has been captured while Kerrie is still available for consultation. The ANIC now has data for most of the species of nematodes collected in Australia.

In their previous storage, the slides needed regular checking for cracking and drying, followed by the laborious process of re-mounting if deterioration was evident. The temperature- and humidity-controlled conditions at ANIC are much better for storing nematode slides with minimal deterioration, so the move should see much more secure storage with better longevity for a large number of Australian nematode slides.



Mike and Manda working on the nematode slide collection



## Artificial Intelligence analysis of museum specimens

Nicole Fisher and Juanita Rodriguez

The Queensland fruit fly *Bactrocera tryoni* (Q-fly) is an Australian endemic horticultural pest species, which has caused enormous economic losses. It has the potential to expand its range to currently Q-fly-free areas and poses a serious threat to the Australian horticultural industry. A large number of studies have investigated the correlation between environmental factors and Q-fly development, reproduction, and expansion. However, it is still not clear how Q-fly morphological traits vary with the environment.

As part of the Environomics Future Science Platform (FSP), a project led by Dr Renee Catullo (Postdoctoral Fellow) used the Q-fly as a case study to showcase the application of biodiversity informatics methods to better inform conservation planning,



Photo 1. The red line shows the intertegular length in a Q-fly (a proxy for body size). [Leica DFC 500 with a 0.63 objective]

and to provide explicit information for managing species posing a biosecurity risk.

ANIC holds 1436 *Bactrocera tryoni* specimens, which had been largely untouched and un-databased. Through ANIC's databasing pipeline (databasing and imaging all 1,436 specimens), the study was able to obtain data for three morphological traits: body size, wing shape, and fluctuating asymmetry in Q-fly samples collected from 1955 to 1965. ANU student Yufei Zhou (Research School of Biology) measured the specimens from images, and the results can be found in the journal *Insects* 2020, 11, 390; doi:10.3390/insects11060390

Environmental data used in this study was downloaded from the Atlas of Living Australia (ALA). Thanks are due to all the members of ANU Craig Moritz's group, who provided feedback on data analysis and discussion.

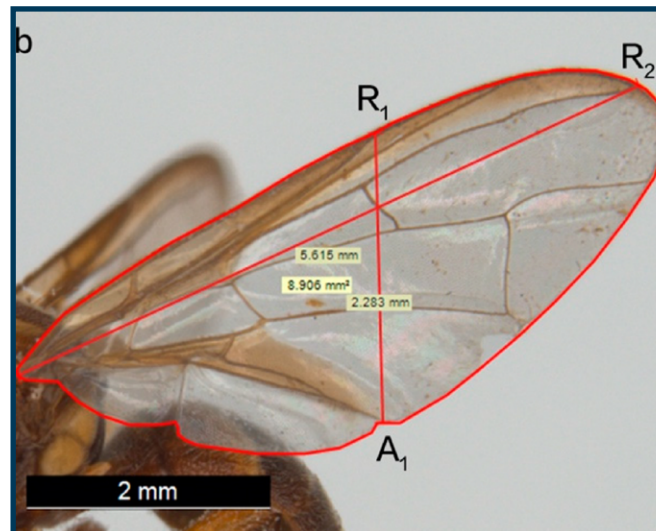


Photo 2. Wing length, width, and area measurements, measured by outlining the edge of the wing using Lecia Application Suite software.

With advances in machine learning (ML) and artificial intelligence (AI), future digitisation projects will see an increase in the efficiency of the gathering of phenotypic data through the recognition and extraction of features of interest, which can be rapidly measured. This will generate conservation and biosecurity outcomes at a much quicker pace than is possible with current methods.

During this study we investigated an AI prototype that could automatically recognise, extract and measure the wing area of a fruit fly. The neural network analysis was developed by ANU Computer Science & Information Technology student Zibo Wang, trained using 20 pictures of ANIC specimens. These preliminary analyses will be used in the newly funded [Artificial Intelligence and Machine Learning Future Science Platform](#), which will have a postdoctoral fellow focusing on ANIC's specimens.

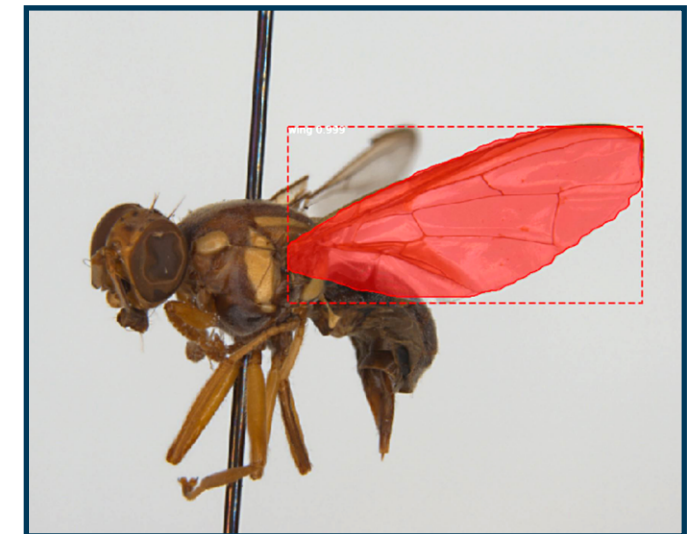


Photo 3. Automating measurements of wings in the future. Image taken from a neural network analysis developed by ANU student Zibo Wang

## Farewell John Dugdale

Marianne Horak and Ted Edwards

We were both greatly saddened to learn of the death on 4 September 2020 of John Dugdale, at the age of 85, former lepidopterist with DSIR and then Landcare Research New Zealand based in Auckland. John retired to become a Research Associate based in Nelson and was a great friend to the ANIC.

John's primary interest was moths, but he also published on Cicadidae and Tachinidae. His work had a humbling depth of scholarship and insight, with his two most important contributions being his recognition of the fundamental morphology of the Exoporia female genitalia, which firmly established the Exoporia as a monophyletic group in the Lepidoptera, and his crowning Fauna of New Zealand contribution No. 14, Lepidoptera - an annotated catalogue, and keys to family-group taxa. The depth of his knowledge of New Zealand Lepidoptera was amusingly illustrated when he picked Marianne up at the airport for his retirement celebration and complained, passing some mangroves, that he had just found a new moth there, which now made his catalogue outdated. As an Australian lepidopterist, with more than half our fauna still unnamed, she had to laugh.

John was educated at the Cathedral Grammar School, and Canterbury University, Christchurch, and subsequently worked for some years as a lepidopterist with the New Zealand Forest Service before moving to DSIR Entomology, which was then attached to the Cawthron Institute in Nelson. While there he advised and mentored Marianne, who needed a topic for two years of fieldwork for a Master's thesis. His inspired suggestion to study a then current mass outbreak of the oecophorid *Proteodes carnifex*, a small moth that from time to time defoliates large tracts of *Nothofagus cliffortioides*, started her on her Microlepidoptera taxonomy career. In about 1970 DSIR Entomology was moved to Auckland, where John continued his enormously wide-ranging but deep-cutting study of New Zealand moths. He always knew ten times as much as he published but cut his published work to the bone.

John brought an invaluable combination of talents to his taxonomic work, an incisive and analytical intellect and exceptional field work skills. Marianne still vividly remembers how John, in 1967 in the Craigieburn Range behind Christchurch, would announce on seeing some plant from 10 m away what caterpillars were to be found on it, and where. Similarly, perceptively analysed observations formed the basis of his excellent morphological studies, and if John could not poke a hole in an hypothesis or find fault with a paper one knew that it could safely be submitted. He shared his knowledge in the most generous way and was always prepared to listen to others'



John Dugdale

arguments – though they better be cohesive! He was the best mentor one could imagine!

He first visited Australia and CSIRO in 1970 as a respected guest of Ian Common, and some of his work included Australian species in genera that were shared with New Zealand. In later years, with easier travel and having become a firm friend to us both, he visited several times. We had two glorious biological tourist trips with him in his retirement, one to New Caledonia together with Bobbie Hitchcock, and a wonderful insider tour of the South Island. After two weeks of nearly cloudless skies, even on the west coast, John said that he would be prepared to travel with us any time again. Marianne's reply that in German one would say 'if angels travel...' was countered by his take that 'the devil looks after his own'!

John, the only child of a teacher, was a scholar and a gentleman in the very best sense of the phrase. His conversation was erudite to an astounding depth, always enlivened by his often wicked sense of humour. Ted fondly remembers his comment of a poor and not-so-poor wine - "Chateau d'If" he would call it. John was one of the rare people prepared to be honest with himself, which made him an invaluable friend. The same traits obviously also made for a very happy family life with his beloved wife Kathy, who sadly predeceased him by 13 years, and his three children, of whom he was exceedingly proud. At a time when there were still few female scientists, John never gave Marianne the impression that there was anything she could not do because she was female, an attitude further illustrated by his two strong and adored daughters.

While John was at DSIR and its successor, Landcare Research, we both felt we had a solid, reliable, informed and caring friend and colleague over the Tasman on whom we could rely implicitly, and that was a very comforting feeling.

Rest with the most deserving, John.



## ANIC BOOSTS SNAIL MAIL

### Bathurst Copper Butterfly Stamp

On 4 August 2020 a set of six stamps was issued by Australia Post, featuring Wildlife Recovery. One stamp depicts the Bathurst Copper Butterfly, discovered and described in 1978 by staff at ANIC. The first new species to a postage stamp in 42 years and an invertebrate too! Curiously none of the six species featured was a snail; that would have been a coup.

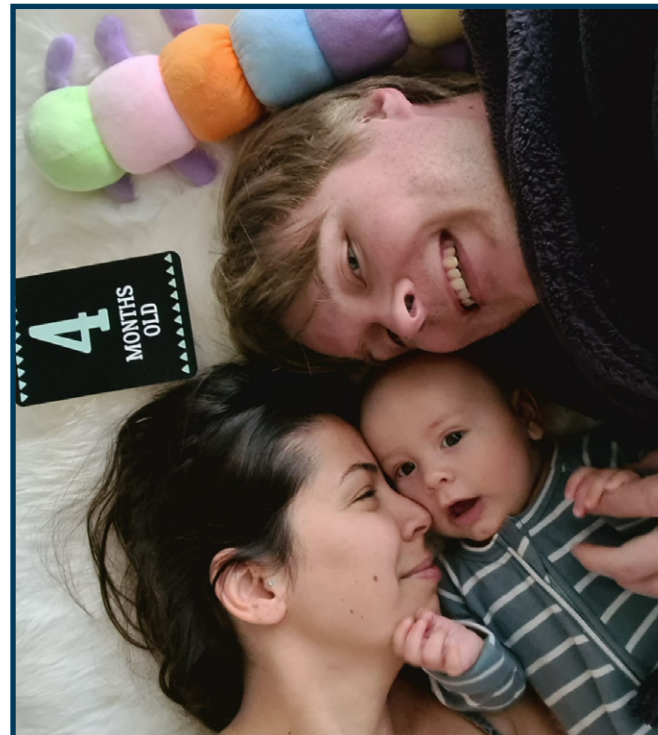


## Welcome baby Nicholas

Federica Turco

Particularly in such a complicated and troubled year, it is with immense pleasure and joy that I would like to announce the arrival of a new ANIC baby. Our own Luana Lins, a CERC Postdoctoral Fellow in ANIC working with Andreas Zwick on one of the Environomics Future Science Platform projects, has welcomed her first baby boy, Nicholas.

Nicholas dos Santos Stewart-Lins was born at 7:39pm on the 4th June 2020. He came to the world as a healthy 3.8 kg and 51 cm long baby and he is thriving in the loving hands of mum Luana and dad Patrick. Congratulations to the Stewart-Lins young family from all their friends in ANIC!



*Humerolethalis sergius* is one of the 165 new species described by CSIRO collections staff (article on page 3). This genus name is derived from the Latin words *humorosus*, meaning wet or moist, and *lethalis* meaning dead, in honour of the fictitious character Deadpool, due to the close resemblance of dark markings on the mesonotum to the character's mask

## Recent publications

**Braby, M.F., Edwards, E.D. & Williams, A.A.E.** (2020) A new species of Sun-moth, *Synemon kimberleyensis* sp. nov. (Lepidoptera Castniidae), from the Kimberley in Western Australia. *Journal of the Lepidopterist's Society*, 74 (1), 31–42. <https://doi.org/10.18473/lepi.74i1.a4>

Cerasa, G., Lo Verde, G., Caleca, V., Massa, B., **Nicholls, J.A.**, & Melika, G. (2020) Description of the sexual generation of *Dryocosmus destefanii* (Hymenoptera: Cynipidae: Cynipini) and disclosure of its life cycle. *Zootaxa*, 4742, 359–374. <https://doi.org/10.11646/zootaxa.4742.2.9>

Decker, B., Pitts, J.P., **Yuan, D.**, **Rodriguez, J.** (2020) Re-examination of Australian and Oriental species of *Minagenia* Banks, 1934 (Hymenoptera: Pompilidae), with a new record for the genus in Australia and a new species description. *Zootaxa*, 4768 (3), 383–394. <https://doi.org/10.11646/zootaxa.4768.3.5>

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