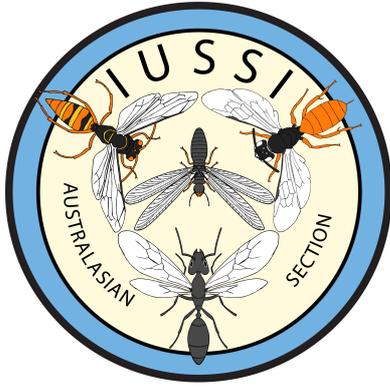


NEWSLETTER # 11

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December 2019



IUSI Australasian-section President 're-discovers' world's biggest bee *Megachile pluto*. But is it social?

Photo: CNN

Greetings,

Welcome to the 2019 newsletter, it's been a busy year and I extend sincere apologies for my glacial pace in getting this issue out - *better late than never*.

Inside we highlight the new editor of our society's journal *Insectes Sociaux* and unwrap the best paper of 2018, along with some highlighted articles from the Australasian-section members. We also have two researcher profiles on incoming and returning IUSI members. There is an overview of ongoing pollination research at *Western Sydney University's Hawkesbury Institute for the Environment*. Short notes are provided on recent local scientific meetings along with adverts for upcoming international meetings of interest. We then implore you to subscribe and end with a suggested reading for those interested in philosophical musings.

On behalf of the Australasian Section Officers (*President Simon Robson & Treasurer Nathan Lo*), we collectively thank you for your continued support and wish you well for the coming year.

Sincerely,

Simon Tierney

Australasian Section Secretary – International Union for the Study of Social Insects (IUSI)

s.tierney@westernsydney.edu.au



<https://insectessociaux.com>



<https://twitter.com/inssociaux>



<https://www.facebook.com/InsectesSociaux?ref=bookmarks>

Insectes Sociaux



<http://link.springer.com/journal/40>

Newly Elected *Editor in Chief* **Miriam Richards** would like to encourage you to submit to ***Insectes Sociaux***. Aside from research articles, the journal is always looking for review articles, especially from PhD candidates, and the IUSSI awards cash awards for them!



Miriam Richards. Photo: c/o brocku.ca

Paul J. Davison and Jeremy Field have received the prize for the **Best Paper published in 2018**:

Davison PJ & Field J. 2018. Environmental barriers to sociality in an obligate eusocial sweat bee. *Insectes Sociaux* 65: 549-559.

<https://link.springer.com/article/10.1007%2Fs00040-018-0642-7>

The authors tested the effect of environment on expression of eusociality by transplanting nests of an obligately eusocial sweat bee, *Lasioglossum malachurum*, from their native habitat in southeastern England to a northern site with a much shorter growing season. Their core hypothesis was that length of growing season and its corresponding effect on colony longevity are limiting factors for sociality, with longer growing seasons being required for completion of enough brood cycles to encompass a eusocial strategy. This was an extraordinarily challenging experiment to execute, as it involved excavation and transport of soil containing potentially fragile nest structures. Their results clearly support their hypothesis and help us to understand the conditions under which eusociality can evolve.

Paul Davison received a MZool degree from the Bangor University and then his Ph.D. from the University of Sussex. **Jeremy Field** is Professor of Evolutionary Biology at the University of Exeter. His lab focuses on behavioural plasticity and the evolutionary mechanisms underlying social behaviour in primitively eusocial wasps and bees.

The editors and editorial board of *Insectes Sociaux* selected the recipient of this award. The board consists of prominent scientists from leading universities with global representation. *Insectes Sociaux* publishes original scientific studies and review articles about social arthropods.

Recent articles from our section include:

Middleton EJT, Reid CR, Mann RP & Latty T. 2018. Social and private information influence the decision making of Australian meat ants (*Iridomyrmex purpureus*). *Insectes Sociaux* 65: 649–656. <https://link.springer.com/article/10.1007/s00040-018-0656-1>

Luo D, Reid CR, Makinson JC, Beekman M & Latty T. 2019. Route selection but not trail clearing are influenced by detour length in the Australian meat ants. *Insectes Sociaux* 66: 47–56. <https://link.springer.com/article/10.1007/s00040-018-0658-z>

Researchers led by **Tanya Latty** (U Sydney) were interested in how individual meat ants used information to navigate and influence the collective decision-making strategy of the group. In Y-maze experiments, trained ants used memory when trail pheromones were removed and showed no preference when both private- and social-information are in direct conflict with each other.

In the second study, researchers explored how colonies of the meat ant *Iridomyrmex purpureus* selected and cleared trail-routes when presented with obstructions that slowed their travel speed. Ants usually re-routed their trails to avoid minor obstructions, but always travelled directly across obstructions when avoidance involved significantly increased travel time. Their results imply that meat ants minimise travel distance when selecting new trail routes, which may reflect long-term foraging optimisation strategies.



Incoming & Returning Members

Olivia Bernauer began her PhD at the Hawkesbury Institute for the Environment at Western Sydney University with James Cook and Simon Tierney in March 2018. Olivia's research focuses on studying potential alternative pollinators of apple and cherry crops, such as stingless bees (*Tetragonula* sp.), allodapine bees (*Exoneura* sp.), and *Lasioglossum* sweat bees (Halictidae). Given that the introduction of the devastating varroa mite (*Varroa destructor*) to Australia is likely inevitable, reducing our reliance on the pollination services of the Western honey bee (*Apis mellifera*) and promoting alternative pollinators will help ensure the continued production of these food crops into the future.



Olivia Bernauer. Photo: Olivia Bernauer

To study alternative pollinators in these cropping landscapes Olivia is investigating many facets of plant-pollinator interactions and how these ultimately relate to fruit set. She intends to use the results of her PhD research to help growers make informed management decisions to promote an abundance of high-quality pollinators in and around their orchards. First, she will study the pollinator community as a whole by investigating the phylogenetic and functional diversity of the pollinator community found on crop flowers. This study provides a big-picture understanding of the functions that the members of the community play and more specifically, which traits present in the community are repetitive, and which are rare or lacking, and how pollination services can be improved by targeting the enhancement of habitat for species with desired traits. Next, she will dive more deeply into a study of individual pollinator species by asking: which characteristics make high-quality apple and cherry pollinators? High-quality pollinators visit crop flowers frequently, carry large amounts of crop pollen on their bodies, and regularly contact the stigmas.



Exoneura robusta flirting with Pink Lady apple flowers. Photo: O. Bernauer

By examining on-flower behaviours in combination with an assessment of loose body pollen and pollen deposition on crop stigmas, she will have a better understanding of which species are indeed high-quality crop pollinators.

Lastly, she is diving into a descriptive study of the nesting biology and social structure of a common orchard pollinator in Bilpin, NSW, the allodapine bee, *Exoneura angophorae*. Most allodapine bees (tribe Allodapini) are facultatively social bees and often have closely-related social parasites (*Inquillina* sp.) providing an interesting system to investigate further. By studying many aspects of the pollinators present in fruit tree orchards in NSW, Olivia hopes to expand our understanding of these insect species and their roles as potential crop pollinators going forward.

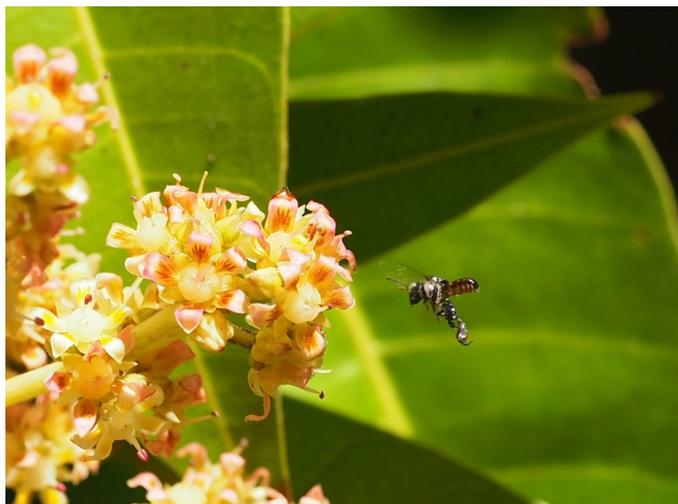
James Makinson returned to Australia earlier this year to work as a postdoctoral research fellow in James Cook's pollination lab at *Hawkesbury Institute for the Environment, Western Sydney University*. James started his research career back in 2009 by undertaking first his honours and then his PhD with the *Behaviour and Genetics of Social Insects Laboratory* at *The University of Sydney*. Supervised by Madeleine Beekman and Benjamin Oldroyd, James' research focused primarily on collective decision-making in Asian and European honeybees. After completing his PhD in late 2013 James did a brief stint as a Research Assistant in Tanya Latty's *Insect Behaviour and Ecology Lab* also at *University of Sydney*, studying the bees present in Sydney community gardens. In 2014 James joined Lars Chittka's *Bee Sensory and Behavioural Ecology Lab* at *Queen Mary University of London*, where he used the harmonic radar system based at *Rothamsted Research* to track the movement patterns of bumblebees and honeybees.



'Mango-Man' Makinson with a fist-full. Photo: Gaurav Singh

James' new role at *Western Sydney University* will take him to the Northern Territory, Australia's east coast and India where he will be studying stingless bees as managed pollinators of tropical crops such as mango, macadamia, lychee and avocado. A number of Australia's native stingless bee species show great potential as crop pollinators, and the goal of the Horticulture Innovation grant that James is employed on is to determine which crops they are suitable for and how

best to deploy the bees onto farms. James is hoping to balance his industry orientated research plans with projects exploring the behavioural ecology and population genetics of stingless bees in Australia and Asia.



Tetragonula mellipes approaching Kensington Pride mango flowers.
Photo: J. Makinson



Society Meetings 2018

Minutes of the 2018 Annual General Meeting International Union for the Study of Social Insects (IUSSI) - Australasian Section

Ouro Preto Room, Convention Centre, Casa Grande
Hotel, Guarujá, São Paulo, Brasil

7th Aug 2018, XVIIIth International Congress of IUSSI

Meeting opened: 14:00 BRT UTC-3hr

Attendance list: Sarah Amidor, Daej Arab, Madeleine Beekman (*IUSSI Secretary General*), Francisco Garcia-Bulle, Tim Heard, Thomas Gillard, Tanya Latty, Ryan Leonard, Phil Lester, James Makinson, Ajay Narendra, Amanda Norton, Benjamin Oldroyd, Ravindra Palavalli-Nettimi, Jorgiane Parish, Simon Robson (*IUSSI Australasian-Section President*), Emily Remnant, Isobel Ronai, Simon Tierney (*IUSSI Australasian-Section Secretary*), Patsavee Utaipanon, Boris Yagound.

Apologies: Nathan Lo (*IUSSI Australasian-Section Treasurer*)

Quorum Achieved: Via presence of two Committee members (S. Robson & S. Tierney)

Agenda:

- Opening Address & Report from *IUSSI Australasian-Section President* Simon Robson
- Round Table Introductions
- Need for periodic meetings in Australia between the International Congress was raised.
- Increase subscriptions to fund more student awards & invited speaker to attend local meetings.
- IUSSI Australasian-Section Website has been created by the President S. Robson.

- Request for members to submit biographies to be uploaded to the website.
- 21 *IUSSI Australasian-Section Members* were supported by society funds to attend the XVIIIth International Congress - AUD\$18,023.00.

Budget:

1 January 2018

Opening Balance AUD\$19,000.00

7 August 2018

Expenditure – travel awards -AUD\$18,023.00

Balance AUD\$77.00

Meeting closed: 15:30 pm. BRT UTC-3hr



IUSSI Aus-Section AGM, Guarujá, Brasil, August 2018.
Photo: S. Dalí

2018 IUSSI International Committee Meeting

J. Bonifácio P. Leopoldina Room, Convention Centre,
Casa Grande Hotel, Guarujá, São Paulo, Brasil

7th Aug 2018, XVIIIth International Congress of IUSSI

Meeting opened: 18:00 BRT UTC-3hr

Agenda:

- Opening Address & Report from *IUSSI Secretary General* Madeleine Beekman
- Vote for *Insectes Sociaux* Editor - assembly elected Miriam Richards.
- Changes to Hamilton Award - ballot for no change to this award
- Introduction of Mid/Early-Career or Local Award - Crozier Award floated
- Introduction of an IUSSI *Code of Conduct* – Australasian-Section voted in agreement & assembly voted for introduction of such a code.
- Brazilian-Section raised the possibility of the local IUSSI-Section keeping profits from the International Congress -assembly voted against, rather that money goes back to Society for running of the subsequent International Congress.
- Koos Boomsma donated Hamilton Award funds back to the society to cover costs for someone (David Nash) to digitize the *IUSSI Archives*.
- Encyclopaedia of Social Insects is underway – c/o Editor in Chief Chris Starr.

Meeting closed: 20:15 pm BRT UTC-3hr



Recent Scientific Meetings

Australasian Evolution Society, 25-27 Nov 2019
The Roundhouse, University of New South Wales



UNSW Roundhouse.

The Australasian Section of IUSI held a symposium with speakers from *Flinders University, Macquarie University, Western Sydney University, University of Adelaide, University of Melbourne, and University of Sydney* providing insights on contemporary ant and bee research in Australasia. We also held an AGM at this meeting.

Centre for Biodiversity: Bee Genomics Working Group, 5-7 December 2019
St Leo's College, University of Queensland



CBA – Bee Working Group, Brisbane, December 2019. Photo: I. Gray

A group of national and international researchers recently convened in conjunction with the 2nd Australian Native Bee Conference to explore the use of avant-garde genetic methods and their applicability for understanding the evolutionary history, biodiversity and ecology of Australian bees. Symposia were held on *Systematics & Taxonomy, Ecology, and Functional Genomics*; preceded by keynote talks from Eduardo Almeida (*University of São Paulo*), Michael Batley (*Australian Museum*), Michael Branstetter (*USDA*), Laurence Packer (*York University*), Margarita Lopez-Uribe (*Penn State University*) and Sandra Rehan (*York University*). This working group was funded from a *Centre for Biodiversity Analysis* grant awarded to Saul Cunningham (*Australian National University*), Juanita Rodriguez (*ANIC, CSIRO*) and Simon Tierney (*HIE, Western Sydney University*).

Upcoming Scientific Meetings

2nd SydBee Meeting, 21 February 2020
*Hawkesbury Institute for the Environment,
 Western Sydney University, Richmond, NSW*

This meeting will differ from the inaugural (February 2019) *SydBee* meeting in that only overview talks from the main Sydney research laboratories will be included in the programme. This will then be followed by an afternoon workshop on *Social Insect Collective Behaviour* presented by visiting scholar Assoc. Prof. Adam Cronin (*Tokyo Metropolitan University*). We will finish the day with a BBQ.



Ass. Prof. Adam Cronin & *beasties*. Photo: A. Cronin
<http://adamcronin.neted.com.au/>

European IUSI Meeting 24-26 August 2020
University Paul Sabatier, Toulouse, France



As for previous iterations, three days of conference will be organized with topic symposia and open sessions. The organisers aim to cover a broad range of emerging as well as classical topics, and preference will be given to symposia that are not restricted to only one taxon.

Accepted symposium:

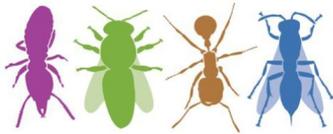
Understanding social insect pollination: behavioural and genetic approaches

Convened by:

- Simon Tierney - Western Sydney University
- Olivia Bernauer - Western Sydney University
- Michael Garratt - University of Reading
- Anders Nielsen - University of Oslo



The Rose City



XIX IUSSI International Congress 3-8 July 2022
San Diego, California, United States of America

The North American Section is organising the next International congress which will be held at the Marriott Marquis, San Diego Harbour. See the Secretary General's December 2019 newsletter for more details. There is no website as yet.



San Diego Bay



Art vs Science

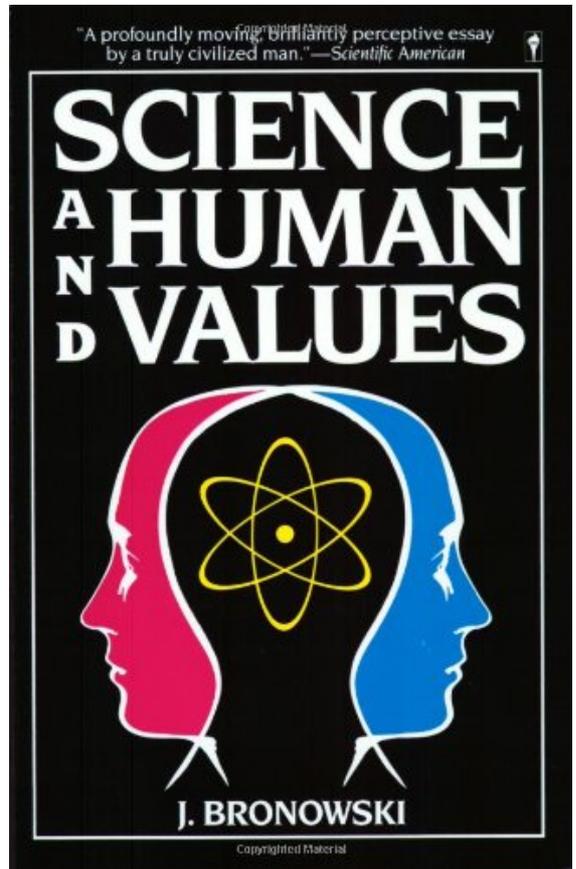


Sydney post-grunge-punk-pop-alternates *Art vs. Science*

Science and Human Values
Jacob Bronowski (1956)

Thought-provoking essays on science as an integral part of the culture of our age from a leader in the scientific humanism movement. "A profoundly moving, brilliantly perceptive essay by a truly civilized man."--*Scientific American*

The fiery genius of science enabled the [atom] Bomb and all its desolation: after such knowledge, what forgiveness? Such is the accusation Bronowski weighs up in **Science and Human Values** (originally delivered in lecture form at the Massachusetts Institute of Technology in 1953, published 5 years later.) With care and erudition and great skills of communication, Bronowski seeks to impress on us that scientific endeavour is an essentially creative act, part of a great shared human interest in ourselves and the world around us; and an often haphazard/trial-and-error process, the end of which is not – cannot be – preordained.



Harper Perennial, Revised edition cover (1990)

But Bronowski sees art and science as being on a shared search for value, a quest to understand and express the world, using different tools but shared concepts – one of these being metaphor. "What is a poetic image," he asks, "but the seizing and the exploration of a hidden likeness, in holding together two parts of a comparison which are to give depth to each other?... There are discoveries to be made by snatching a small likeness from the air too, if it is bold enough... The scientist looks for order in the appearances of nature by exploring such likenesses."

Extract from:

Jacob Bronowski: Boldly on BBC4

Richard Kelly, 9 December 2010

<https://www.faber.co.uk/blog/jacob-bronowski-boldly-on-bbc4/>



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