# IUSSI, North-west European Section
## (International Union for the Study of Social Insects)
# Autumn Newsletter 2010

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### Officers of the British Section of the IUSSI

**President** Professor Jeremy Field, School of Life Sciences, University of Sussex, Falmer, Brighton BN1 9QG, U.K.
E-mail: J.Field@sussex.ac.uk
Webpage: http://www.lifesci.sussex.ac.uk/research/field_group/Jeremy_Field.html
*Contact him about:* anything too challenging for Elva or Eamonn to deal with.
**Secretary** Dr. Eamonn Mallon, Dept. of Biology, University of Leicester, LE1 7RH, U.K.
Email: ebm3@le.ac.uk
Webpage: http://www.le.ac.uk/bl/ebm3/homepage.html
*Contact him about:* newsletter, meetings, general information.
**Treasurer** Dr Elva Robinson, York Centre for Complex Systems Analysis, Department of Biology, Area 17, University of York, Heslington, York YO10 5DD,U.K.
E-mail: Elva.Robinson@yccsa.org
Webpage: http://bioltfws1.york.ac.uk/biostaff/staffdetail.php?id=ejhr*Contact her about:* membership, student grants.
**Webmaster** Dr. David Nash, Centre for Social Evolution, Department of Biology, Universitetsparken 15, DK-2100 Copenhagen East, Denmark.
E-mail: DRNash@bio.ku.dk
*Contact him with*: information and suggestions for the web site.
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Meetings site: http://www.iussi.org/meetings.html
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### Section news

# Annual Winter Meeting of the NW European Section of the IUSSI

## Friday 10th December, 2010

Neil Chalmers Room, Natural History Museum, Cromwell Road, London, SW7 5BD

09:00 Registration, coffee, put up posters
09:50 Welcome – Jeremy Field

**Morning Session 1**

10:00 – 10:30 **Andrew Bourke** (UEA) Inclusive fitness theory and the major evolutionary transitions.
10:30 – 10:45 **Cris Clayton** (student – Leicester) Methylation in the bumblebee *Bombus terrestris*
10:45 – 11:00 **Joe Colgan** (Trinity College Dublin) More phenotypic bang for your genomic buck: Gene expression analysis for the life cycle stages, castes and sexes of the bumble bee, *Bombus terrestris*
11:00 – 11:30 Coffee

**Morning session 2**

11:30 – 11:45 **Marlene Sturup** (student Copenhagen) Variation in patriline distributions between developmental stages in the leafcutter ant *Atta colombica*

11:45 – 12:05 **Henrik de Fine Licht** (Copenhagen) Laccase gene expression as a possible key adaptation for herbivorous niche expansion in the attine fungus-growing ants

12:05 – 12:20 **Helene Muller** (student QMUL) The relevance of animal personality for the study of social insects

12:20 – 1:00 **IUSSI Business Meeting** (for all members and potential members)

1:00 - 2:00 Lunch

**Afternoon session 1**

2:00 – 2:50 **Invited speaker. Dr. Chris Thompson, University of Manchester.** A simple developmental mechanism for complex social behaviour in Dictyostelium

2:50 – 3:10 **Matthias Furst** (Copenhagen) Impact of multiple parasites on *Bombus terrestris*

3:10 – 3:25 **Sze Huei, Yek** (student Copenhagen) Do ant social parasites tend to lose their metapleural glands?

3:25 – 3:25 Coffee

**Afternoon session 2**

3:50 – 4:10 **Mathieu Lihoreau** (QMUL) Trapline foraging by bumblebees: how tiny brains solve complex routing tasks

4:10 - 4:30 **Thomas Schlegel** (Bristol) The use of direct-switching in house-hunting decisions by rock ants

4:30 – 4:45 **Claire Asher** (student Leeds) Division of Labour, Dominance and Risk Taking in Dinosaur Ants

4:45 – 5:00 **Liz Franklin** (student – Bristol) The multiple sensory modalities used for navigation and tandem running.

**To attend:** Prior registration not required (Members: £7.50, £2 students; Non-members £10, £5)
**Directions:** Natural History Museum is on Cromwell Road, London, SW7 5BD. The two nearest tube stations are Gloucester Road or South Kensington (Piccadilly, District, and Circle lines).
**Organisers:** *Programme:* Eamonn Mallon (ebm3@le.ac.uk),
*Venue:* Paul Eggleton (p.eggleton@nhm.ac.uk).
**Poster:** Posters are also welcome – just bring them along.

## Call for papers for a special edition of Psyche

Adam Hart is guest editing a special issue of Psyche that might be of interest to IUSSI members - http://www.hindawi.com/journals/psyche/osi.html and the call is here http://www.hindawi.com/journals/psyche/si/nuai.html

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## Upcoming Meetings

David Nash keeps a comprehensive and regularly updated webpage of upcoming meetings at http://www.iussi.org/meetings.html.

13-23 January 2011 **First Neotropical Hymenoptera Course**

*"Jenaro Herrera" Research Center, Loreto, Peru*

The first offering of the Neotropical Hymenoptera Course will take place in "Jenaro Herrera" research center, Department of Loreto, in the Peruvian Amazon. The station is located in a biodiversity hot spot,

in the middle of rainforest that includes a variety of ecosystems. Deadline for applications to join the course is 15 October 2010. More details can be found on the course web site.

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25-28 March 2011

**2nd Meeting of Central European Section of the IUSSI**

*HÖB in Papenburg, Germany*

The meeting will start in the evening of the 25 March with a welcome reception followed by two days of scientific program. Departure will be in the morning of 28 March. Plenary Speakers will be Andy Gardner, University of Oxford, UK and Kevin Foster, Harvard University, USA.

For more details visit the meeting website or download the meeting flyer.

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25-30 July 2011

**Behavior 2011**

*Indiana University, Bloomington, Indiana, USA*

The first-ever joint meeting of the International Ethological Conference (IEC) and the Animal Behavior Society (ABS). The organizers "would very much like to encourage scientists working on the behavior of social insects to attend and present their findings at this meeting." For more details, see the meeting website. The call for symposia is now open - deadline 1 October 2010.

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## Lab News

### The Paxton Lab (Queen's University Belfast)

In February 2010, three of the group spent various amounts of time with colleagues at the Autonomous University of Yucatan, Merida (Mexico) working on diverse problems from diploid male production in orchid bees (Dr. Antonella Soro) through to avocado pollination and ecosystem service provision (Lorraine McKendrick and Robert Paxton), funded by an EU-Mexico collaborative project MUTUAL. Though we all imagined we might have escaped the cold and ice of the upper latitudes of the Northern Hemisphere, sub-tropical Mexico proved to be unusually cold and dry, which hampered us all a little. We'll just have to return next year!

Group member Emma Seale, who had been working on the conservation biology of the marsh fritillary butterfly, successfully defended her PhD thesis and is now postdocing in west Cork – alas for us on the botanical rather than social insect end of biology. Orlando Yañez is in the final throes of writing up his PhD on viral diseases of the honey bee, specifically addressing Deformed Wing Virus (DWV) and various genetic variants thereof. He is due to submit in April and will then (fingers crossed with the bureaucracy) take up a postdoc in Switzerland with Peter Neumann, deepening his studies of DWV.

Other group members I have yet to mention are Emily Davis, in her final year of PhD studies on the conservation biology of a rare mining bee, *Colletes floralis*, and David Trew, in the middle of his PhD on the socially polymorphic *Halictus rubicundus*. David plans to visit Robert and Antonella in the USA this summer 2010, where both are on sabbatical in the lab of Bryan Danforth at Cornell. Plans are to study solitary and eusocial populations of the species in the Rocky Mountains and to initiate a genomic analysis of this rather special species. Finally, Dr

Manuela Giovanetti, a Madame Curie postdoc working on social evolution in sphecid wasps, is back in business in the lab, genotyping and sequencing.

The big (personal) news is that Robert will move from Queen's to take up the chair in 'general zoology' at the 'Martin-Luther-University Halle-Wittenberg', Germany, working alongside Robin Moritz and his group. The move is planned for some time this summer 2010, when he will be joined by former group member Dr. Tom Murray and Antonella. With grants running and some group members also remaining at Belfast, he will also maintain a position at Queen's for the foreseeable future. Thank goodness for ryanair and easyjet.

Robert

**Centre for Social Evolution (CSE), University of Copenhagen: The Boomsma, Eilenberg, d'Ettorre, Nash and Pedersen labs**

Summer is over and the entire CSE community looks back on a successfully completed IUSSI congress. We were very pleased to receive many positive feedbacks from delegates, and wish to pass on our sincere thanks to all section members who made active contributions. It was a week filled with exciting science and joyous social interactions and we look forward to the next international meeting downunder in four years time.

Over the summer the Centre also hosted two well attended PhD courses, "Evolutionary Genetic Approaches to Study Social Evolution" in July organized by our Marie Curie postdoc Tim Linksvayer and Mike Wade from Indiana University, and "Social Evolution and Kin Selection" in September organized by Joan Strassmann and Dave Queller from Rice University (soon moving to Washington University St Louis), who are spending a three month sabbatical stay with us.

Nick Bos from the CODICES group represented CSE at the ISCE conference in Tours, where he won an award for the best student oral presentation. Later in the summer he also attended the ant course in Borneo and in between his busy schedule he has been writing up manuscripts. Nick is fighting with some very nasty hornets that attack bee hives in Toulouse, where he is now to work on a bee project with Martin Giurfa's group. Volker Nehring has been continuing writing manuscripts, analysing chromatograms and playing with R. He also helped Master student Janni Larsen to make sense of *Acromyrmex* behaviour and chemistry. Luke Holman, the other R player in the group, has been also playing with models and trying to solve Crozier's paradox. The experimental *Lasius* season went well and another manuscript is almost ready to be submitted. Patrizia is busy managing her professorship at University of Paris 13 (LEEC) while still spending some of her time in Copenhagen. Patrizia has a new PhD student starting 1st of October in Paris, Lisa Signorotti: the first Italian PhD student for her! Lisa will be co-supervised by Rita Cervo, from the Turillazzi group, Firenze, but will surely interact with the CSE community.

Line Vej Ugelvig successfully defended her PhD thesis on "Ecological genetics and evolution of the Large Blue butterfly - consequences of an extraordinary life cycle" on the 24th September. She will stay with us for a few more months before starting a 3 year postdoc at the Institute of Science and Technology, Vienna, where she will join Sylvia Cremer. David Nash will thus say goodbye to one more successfully graduated PhD student but will have Sämi Schär from the University of Zürich arriving as a new PhD student in November. Postdoc András Tartally has had a busy summer, with fieldwork on *Maculinea* and *Myrmica* not only in Denmark, but also in Hungary and Portugal.

Anna Mosegaard Schmidt likewise handed in her PhD thesis "The invasion biology and sociogenetics of pharaoh ants", and is currently busy preparing for her defence. Tim Linksvayer and Anna continue to maintain a large number of pharaoh ant colonies for artificial selection experiments, while MSc student Rasmus Stenbak Larsen continues his work on the behavioural and genetic adaptations of invasive *Lasius neglectus*. Luigi Pontieri from Florence has just been appointed as a new PhD student to continue the pharaoh ant work.

We wished a fond farewell to Susanne den Boer, who has left CSE to join Boris Baer at the University of Western Australia in Perth, but will return in 2013 for the "return year" of her "outgoing" Marie Curie Fellowship. Susanne and Boris are, at the time of writing, joined by a relatively large delegation from the CSE community as UWA is hosting the International Society for Behavioral Ecology congress. Tim Linksvayer, Luke Holman, Volker Nehring,

Aniek Ivens and András Tartally will all be attending the congress, and many of them will be giving talks on their latest research, so we are looking forward to getting an update upon their return. Henrik de Fine Licht is busy writing up manuscripts, as he will soon move to Lund University just across the Øresund channel in Sweden, to continue his research on symbiotic fungi of attine ants. The fungal agriculture group also welcomed back Marie Curie fellow Rachelle Adams after a long field season in Panama and Michael Poulsen who has received a prestigious Danish Fellowship to return to our group after five years in the US working with Cameron Currie. MSc student Janni Larsen is almost ready to hand in her thesis, but will remain research active in the coming months as research assistant of Rachelle. Sandra Breum Andersen is busy finishing up her *Wolbachia* research before she will be spending several months in Brazil and at Penn State University with David Hughes and Marc Seid as part of her PhD work.
Together with their Chinese collaborators, the attine branch of CSE has obtained the annotated genome sequences of *Acromyrmex echinatior* and our molecular/bioinformatics postdocs Sanne Nygaard and Morten Schiøtt are busy doing the final analyses and writing up. The attine fungal work was reinforced by Pepijn Kooij, who now also formally starts his PhD work after several shorter earlier appointments at CSE. Marlene Stürup started her PhD work just before the summer and will continue the work on attine mating system evolution.
Jørgen Eilenberg and Annette Bruun Jensen's PhD student Svetlana Vojvodic, from CSE's insect pathology branch, has handed in her PhD thesis entitled "Evolutionary Ecology of Fungal Parasites in Honey Bees", which she will be defending in a couple of weeks. Sze Huei "Zoe" Yek recently completed an experiment on metapleural gland regulation in *Acromyrmex octospinosus* together with Annette, and is busy doing the final revisions of a review on metapleural glands (her MSc work with Ulrich Mueller). PhD students Bernhardt Steinwender and Anja Wynns continue their respective studies on Hypocreales ecology and diseases of solitary bees, and newly started PhD student Joanna Piatkowska has initiated her studies on Entmophthorales fungal disease in *Formica* ants – all this under the joint supervision of Annette, Nicolai Vitt Meyling and Jørgen. Finally, Martyna Zwoinska, an MSc exchange student from the University of Warsaw, Poland is visiting CSE for a 6 month stay to work on modifications in hygienic behavior in *Acromyrmex echinatior* upon infection by entomopathogenic fungi under the guidance of Annette and Sze Huei.
Marlene Stürup and Henrik de Fine Licht

**The Bourke Group (University of East Anglia)**

We'll shortly be welcoming two new students to the group. **David Collins** arrives in October to do a PhD project on the role of microRNAs in the caste determination of bees, supervised by **Andrew Bourke** and a UEA colleague, molecular geneticist **Tamas Dalmay**. **Henry Ferguson-Gow** arrives at the same time to start a PhD project on the evolution and diversification of ants from a comparative perspective. This project is jointly supervised by Andrew at UEA and **Kate Jones** and **Seirian Sumner** at the Institute of Zoology, Zoological Society of London. Meanwhile, existing group members all enjoyed attending the excellent International IUSSI Congress in Copenhagen in August, and are now back in the swing of their own projects. **Edd Almond** and **Tim Huggins** are continuing their work, which is collaborative with **Joel Parker** at the University of Southampton, investigating the effect of social conflicts on ageing in the bumble bee *Bombus terrestris*. **Lucy Field** is about to enter the writing-up stage of her PhD project testing aspects of kin selection theory in the ant, *Leptothorax acervorum*. **Jacob Holland** is entering the second year of his PhD project on the influence of the queen on the colony cycle in *B. terrestris*. Finally, Andrew's forthcoming book, which is entitled *Principles of Social Evolution* and aims to explore the common principles underlying the major transitions in evolution, has now passed the proof stage and should be out in January.

**The TEAM::ANTZZ Lab! (Helsinki)**

After a hot and dry summer autumn is arriving with warm and sunny days. Since April the group has seen very few major changes. **Heikki Helanterä** has started on his five-year Academy research fellowship, and will be looking for new PhD students in the near future. One PhD student from Germany, **Eva Schultner,** already started last spring to study

cannibalism in *Formica* ants. **Kalle Trontti** who likewise secured a three-year grant from the Academy of Finland, is busy with his research on oxidative stress, immune defense, and ageing in *Formica exsecta*. He also continues to be a part-time MES lab coordinator. **Martina Ozan** started her 4-year graduate school fellowship on for her PhD on reproductive partitioning in *Formica fusca* with a maternity leave, her daughter was born on September 19. **Anton Chernenko** has now finished his last field season and will spend the next year analyzing data and writing up. Meanwhile, he and Eva did find the time to attend the ant course organized by the California Academy of Sciences in Borneo, Malaysia, where they spent two weeks discovering exotic ant species along with students from 40 countries. Finally, **Lotta Sundström** started her one-year sabbatical from the Academy of Finland, and will be leaving for a two-month stint in London to work with Mark Brown on ant parasites.

In the meantime three students, **Hannele Luhtasela-El Showk**, **Lea Heikkinen** and **Ulla Vattulainen** are hard at work to finish their Master's theses. During the summer the group also hosted several undergraduate students as research apprentices during the summer, **Marta Vidal Garcia from Spain (Erasmus), Maria Malinen, Noora Parkkonen,** and **Siiri Fuchs from Helsinki.**

All group members attended the Copenhagen meeting in August – Australia next. Heikki, however, took an advance on this experience by attending the IBSE meeting in Perth.

*Lotta Sundström*

**The Hammond Lab (University of Leicester)**
Rob Hammond has moved from the University of Hull to the Department of Biology at the University of Leicester and Richard Gill has joined him for the next year as a postdoc on a NERC New Investigator grant. Rich successfully completed his PhD studying "polymorphic social organization in an ant: the ultimate and proximate causes", and Duncan Coston has just submitted his research MSc on reproductive signalling in functionally monogynous colonies of the ant Leptothorax acervorum. PhD student Mike Orchard has stayed in Hull where he continues his work on insect adhesion - including on ants - and its ecological consequences.

**The Martin Lab (Sheffield)**

Our small but perfectly form group is now well established in the new environment centre at Sheffield. This consists of Laura Brettell (working on the Hawaii data and evolution of virulence projects); Emma Gregson (looking at gene expression in Formic ants), Ricky Kather (studying chemical recognition in honeybees and Varroa mites) and Rhian Guillem, who starts in October to spend 3 years looking at developing chemo-taxonomy in ants. This PhD is in conjunction with Paignton Zoo so we hope to develop so real-world applications. We also have a MSc student joining us in October for a year so we are slowly filling up the space in the lab. All the projects and progressing very well, especially the Hawaiian study and I have just been awarded a small research fellowship to return to Hawaii to continue our work there. So that's another winter spent in warmer climes. Finally after 3 trips to Finland we made the breakthrough we have been looking for in the ant chemistry, so next year will be spent testing a series of new ideas and theories, so exciting times ahead.
Stephen Martin

**Laboratory of Apiculture and Social Insects (LASI), University of Sussex**

It was good to see many of you at the Copenhagen IUSSI meeting. What happened to Eamonn Mallon? (Editors reply: Under a pile of used nappies) As someone who has spent about 3 months of his life in Denmark, I was impressed by how much sun we got. It must have been at least 2 hours per day. After spending a sunny and dry summer in Sussex, Danish clouds and rain were a nice change. Joking aside, it was a great meeting and we would all like to thank the Copenhagen group for their efforts.

Since the last newsletter 2 new PhD students have joined us and no one has left. Mihail Garbuzov is from Latvia, but is quite used to England as he did his BSc degree at Sussex University where he impressed Francis by scoring 100% in the theory quiz in the Social Insects course. Despite his excellence in matters theoretical, Mihail's PhD is on "Helping the honey bee and insect pollinators in urban areas" and is mainly conservation and ecology with a lot of field work. Mihail has set up a large project just outside the John Maynard-Smith building, with 25 types of garden flowers to quantify their attractiveness to honey bees, bumble bees and other insects.
Hasan Tofalia is from Syria. He has just arrived and will be doing a PhD in the general area of honey bee defence and foraging.

The LASI research team is now as follows: Postdocs & Reseachers: Dr. Karin Alton & Mr Norman Carreck (hygienic behaviour in honey bees); Dr. Margaret Couvillon (decoding bee dances to study foraging and land use); Dr.
Christoph Grueter (communication in bees and ants); Dr. Jelle van Zweden (recognition in ants and bees); PhD students: Mr. Gianluigi Bigio (hygienic behaviour in honey bees); Mr. Tommy Czaczkes (foraging organization in ants); Mr. Sam Jones (behavioural and chemical ecology of bees and ants); Mr. Martin Kaercher (honey bee recognition and policing); Ms. Fiona Riddell (decoding bee dances…); Mr. Mihail Garbuzov (helping pollinators in urban areas); Hasan Tofalia (honey bee defence and foraging); Summer helper: Mr.
Lee Cooper (decoding bee dances…).

During the spring and summer there have been a constant flow of TV, radio and media people through the lab. It's mostly but not entirely about honey bees. The One Show, a popular BBC TV program have done some filming on ant foraging, which we hope to see on the small screen soon.

Karin Alton has been hard at work on the LASI web site, which you may like to look at www.sussex.ac.uk/lasi.

Foraging Lasius niger ants filmed in LASI were shown on the One Show on Tuesday 19 Oct 2010 at 7.00pm. http://www.sussex.ac.uk/lasi/newsandevents/?id=5628

Look forward to seeing you all at the winter meeting.

Francis Ratnieks

**CBEES research group**, Turku

The research group of the Conservation Biology, Ecology and Evolution in Social Insects (CBEES) of University of Turku was established in 2008. Our group studies ants, bumblebees and social wasps in various ecologically interesting environments such as managed forests and heavy metal polluted areas. Recently, we have also started to study the effects of changing climate on ecologically very important social insects. The overall goal of our studies is to get more information on how environment is associated with life-histories and the evolution of social behaviour of social insects.

The group leader **Dr. Jouni Sorvari** concentrates on diverse topics from biodiversity to evolutionary ecology of social hymenoptera. PhD student **MSc Salla-Riikka Vesterlund** is working with the effects of an invasive commercial strain of the bumblebee *Bombus terrestris* on native bumblebee fauna, and PhD student **MSc Marja Haatanen** studies the effects of environment and phenotype on the survival of ants.

Our master students, **Salla Härkönen** (myrmecophiles), **Riikka Elo** (myrmecophilous mites) and **Maija Arvonen** (*Myrmica rubra*) have all already collected their material and are currently analysing their data.

Link to our web-site: http://users.utu.fi/jousor/cbees

**The Brown Lab (Royal Holloway, University of London)**
It's been a busy 6 months, with Mark splitting himself between Dublin and London to try and keep tabs on everything that's going on. Joe Colgan has been extremely busy with his transcriptomics work, and is now in the process of finishing his first manuscript on bumble bees. Joe has been quite the international traveler too, moving back and forth between Dublin and Edinburgh where our sequencing collaborators live. Ryanair'll be giving him free coffee soon as a frequent flier... Jim Carolan, our Irish post-doc, has been doing sterling work on the bee barcoding project, in particular in a new collaboration with Paul Williams at the Natural History Museum. Jim, Mark and Paul had a great day there talking sequences and looking at the bumble bee collection, before an excellent coffee and cake (we'll give out the locale at the winter meeting for a fee!). Jim's also been using his skills in proteomics to add an extra wing to Joe's work {although Jim might refer to the transcriptomics as the wing "it's all about proteins" :-)} as well as helping to supervise the transcriptomics project. Jim, Joe, Mark and Seirian met in Edinburgh to discuss this work with Mark Blaxter in August, where we all learned *a lot* about how to assemble sequences... Meanwhile, back in the London crew, Catherine Jones and Mark spent a frantic few weeks in April collecting bumble bees in Switzerland, Ireland and the UK, and then Catherine spent most of the rest of her year in the climate room with her worms and bees. In June, we found out that Mark had been awarded one of the UK Insect Pollinator Initiative grants (in collaboration with Robert Paxton, Juliet Osborne and Vincent Jansen), which will keep the lab and the research running for the next 3 years. Matthias Fürst made a very welcome return to the group in the summer, and he has been giving very generously of his time, energy and enthusiasm ever since (around writing up manuscripts from his PhD) despite an absence of filthy lucre so far. Finally, Mark is very excited to have ants back in the lab, as we start projects on ants and parasites in collaboration with Bill Hughes. The IUSSI meeting in Copenhagen gave us an opportunity not only to present our work (posters from Joe, Catherine and Jim) but also to have an almost complete lab meeting (sadly Jim had to remain in Dublin at the last minute because of a job interview – we await the result with fingers crossed!) as well as to socialise with our academic parents and grandparents (the latter for the first time). We all found the meeting inspiring, and exceptionally well-organised, and people are already making their travel plans for the next one in Australia. Mark was also honoured to be asked to sit on the Editorial Board for *Insectes Sociaux*. Our final piece of news is that we're looking forward to hosting Lotta Sundström during her sabbatical from October to the end of November this year – yes, we're getting antier by the minute!

**The Raine lab** (Royal Holloway, University of London)

Things are taking shape nicely in my new lab at RHUL. My first PhD student**, Emily Throgmorton**, started a few days ago. She will be investigating how variation in bumblebee cognitive performance might be adapted to particular environmental conditions. I will soon be advertising for a 3 year postdoc position and a part time technician to work on a new project 'An investigation into the synergistic impact of sublethal exposure to industrial chemicals on the learning capacity and performance of bees' funded as part of the Insect Pollinator Initiative. This is an exciting new project which my lab will be embarking on in collaboration with labs in Dundee (Chris Connolly & Jenni Harvey), Newcastle (Jeri Wright) and UCL (Neil Millar) to study how exposure to combinations of chemicals could be affecting the behaviour of both honeybees and bumblebees. We'll be looking at the potential for effects of exposure from the level of the single neuron all the way up to the colony.

My fruitful collaboration with **Mathieu Lihoreau** and **Lars Chittka** (at Queen Mary, University of London) working on trapline foraging and route optimisation in bumblebees continues. Over the summer we transplanted our experiments from the roof top flight room at QM to a much larger outdoor flight cage near RHUL in Surrey. As well as collecting some really nice data, these experiments also attracted some media attention. In addition to the story on the BBC News website (http://www.bbc.co.uk/news/science-environment-11328076) we filmed with Chris Packham for his forthcoming show 'Animals' Guide to Britain'.

**The Robinson Lab (University of York)**

Social insect research is picking up at the University of York, where Elva Robinson has been appointed as a Lecturer in Ecology. She will take up the post on completion of her current Research Fellowship. Zoe Cook joins her group this term, to start a PhD on modelling the costs and benefits of decentralisation in polydomous species

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# Conference reports

### Reports of the 2010 Congress meeting of the International Union for the Study of Social Insects

Elizabeth Franklin
I was greatly honoured to receive funding to allow me to give an oral presentation at the congress of the International Union for the Study of Social Insects. With around 800 delegates it was the biggest meeting I have attended to date and I was awe struck at the sheer number of people sharing a similar passion for social insect research. The theme that stood out to me from the meeting was that we as researches are beginning to stitch up the effects of the genes within an individual, to the behaviour of the individual and the behaviour of the individual to the behaviour of the super-organism. The congress had many highlights for me, first getting an opportunity to put faces to those all important names you so frequently reference and seeing live debates stuck up in the conference room bringing the literature to life. Second, becoming enthused and inspired seeing talks from professors, post Docs and PhD students from around the world. Every night was a challenge to sleep as my head was buzzing with new ideas and excitement. Third, was the chance to 'strut my stuff' in front of an audience packed with my peers, professors and possibly future colleagues. My oral presentation "Tandem running who takes the lead? Testing the participation and efficiency of experienced and naïve tandem runners" was on the last day of the conference and I was itching to get on to the stage from day one. Finally, getting to meet my peers and joining the network of social insect researches from around the globe felt like joining a big family and I hope to attend the next congress in Australia 2014 and enjoy the reunion!

*Tomer Czaczkes*
The 16th International IUSSI conference was, in this writers humble opinion, an exciting marathon of a conference. Of the over 750 participants, only 88 (+/-5) did not present one thing or another, resulting in a veritable deluge of science. Indeed, my hat goes off to the organising committee as everything, by and large, went very smoothly- no mean feat, I'm sure anyone would agree. Indeed, several innovative developments, such as the poster slides and guiding music, were truly inspired (although one could have wished for more dynamic, or more amusing, guiding music. I suggest equal parts thrash metal, psychedelia and thumping techno music for next conference). While some grumbling was heard about similar symposia occurring as parallel sessions, for the most part everyone seemed very impressed with the organisation. Attendance at symposia was surprisingly good, especially at the end of some of the longer days. The days were indeed long – the Tuesday springs to mind, where round table discussions ended, in parts, as late as 10:30pm.

Several themes and controversies called particular attention to themselves, although I admit that, being unable to be in several places at once, I have a somewhat skewed view of events.

A notable fashion in ant behaviour research was much in evidence, one of tracking individual movements and building social networks from the results. Various methods were demonstrated: video tracking, barcode tracking and the RFID tagging made popular by Elva Robinsons work on house hunting ants. All the methods seemed to produce good and exciting results, and I am in no doubt that we shall see a flood of papers related to them in the

near future. The link to social networks makes this a particularly juicy fish to fry, as it fits right in to recent advances in network theory, which was also much in evidence at the conference.

Controversy and debate was also abounded, beginning with the keynote address by Gene Robinson, which expounded on the joys of high tech molecular biology, and ended with a brave call to arms, calling on us to get 100 social insect genomes sequenced as soon as possible. This contrasted greatly with the invited talk of Raghavendra Gadagkar, who in a charming and engaging manner suggested that too much money and too much equipment may be a hindrance, and argued that with so many exciting species out there which have been studied so little, effort must be put into basic behavioural observations and experimentation. Also controversial was the issue of behavioural syndromes, with Lars Chittka kicking off by denouncing the field in general, followed by Andrew Sih and Ana B Sendova-Franks giving talks demonstrating – you guessed it - behavioural syndromes in social insect individuals.

Anyone who has read my previous conference report about the 2009 Central European meeting may remember some exciting, and highly entertaining, debate between Stefan Jarau and Tom Wenseleers about the role and meaning of geraniol in the caste determination of a stingless bee. I am, admittedly, not overly concerned with this topic, but on seeing the title of Jaraus' talk, I couldn't resist seeing round two. I had reported last year that Jarau and Wenseleers were seen talking, and hopes were kindled of some communication and collaboration. These hopes were dashed, however, and after the talk Wenseleers was visibly squirming in his seat, his hand raised, with a barrage of questions at hand. However, I am sad to report that although the two scientists failed to agree, there was once again no name calling, obscenities or fisticuffs. Roll on Tuscany 2012! I'll bring the popcorn.

Lastly, there was some controversy about the two poster prize winners. Although feelings were mixed as to the quality of the posters – comments about too much small text were bandied about, as were positive comments about attractive layouts – a significant proportion of non-winners questioned thought that the posters did not fulfil the criteria set out by the judging panel (Sign Test, $P = 0.0313$, $N = 5$).

So, in conclusion, this was an excellent conference, containing all the ingredients necessary for a world class gathering of minds – good talks, new ideas, much discussion, more controversy and a grand banquet at the end, culminating with what may have been the worlds sweatiest disco. Congratulations to the organisers, all the speakers and everyone in attendance for making the 16$^{th}$ international conference of the Union for the Study of Social Insects a grand success!

Katherine Roberts

In August we downed hive tool and pipette and headed to Copenhagen, excited about a week of cutting edge science, seeing some of Scandinavia and eating Danish pastries. I attended the conference to present a poster on my PhD research for symposium 28: Parasites in Social Insects. As one of over 750 delegates with around 400 posters, the poster sessions were split into two, to give delegates a chance to see those they wanted. The organisers made a real effort to make the poster presentations an event, and really feel like part of the conference. With posters organised into symposia, advertisement slides were put up between talks to encourage those of similar interest to seek out relevant posters in the long lines of bright colours, graphs and eager researcher faces. The adverts seemed to work well, with those such as Sophie Evison's promising dinosaurs and danger! Along with taps of Tuborg and some very tasty buffet food, the poster sessions had a great atmosphere. The sessions were a real highlight, with the opportunity to discuss my own work as well as other people's, with many group leaders and post docs also presenting work alongside PhD students you got a rare opportunity to speak one on one with some people who normally only present talks and therefore you have limited opportunity to ask those burning questions. Posters that really caught my imagination ranged from Noah Wilson-Rich *et al* on a subject close to my heart the `polyandry versus parasitism hypothesis' in honeybees. Also Hermogenes Ferandez-Marin *et al* poster on a fungal symbiont of fungus growing ants, which had some amazing photographs of mycelia cover on ant pupae. The conference was very

thought provoking and I think the organisers excelled at making those who missed out on talks or brought posters feel really valued.

Catherine Jones

I arrived in Copenhagen for the IUSSI 2010 16th Congress, excited about the huge selection of plenary lectures, presentations, posters and round table sessions to choose from. What a great opportunity to learn more about social insects! With 770 delegates from 43 countries it was also a great opportunity to meet people from around the world, to make new contacts and to catch up with friends.

The local 'workers' at the Panum Institute were very welcoming and helpful. The program was varied and included several presentation formats, 2 poster sessions (which included dinner), more informal round table sessions and the social events. The social events ranged from a visit to Tivoli Gardens to the fantastic Congress Banquet and farewell party where the company was entertaining and the food was excellent – particularly the chocolate (and fruit to make it healthy?) dessert!

The enthusiasm of some of the speakers was inspirational. Boris Baer's talk on bumble bee mating and Joachim Offenberg's talk on ants as a source of protein were particularly memorable. Some talks were memorable for the novel approach to research, such as Elva Robinson's computer controlled 'cat-flap' for ants! After many years of studying an organism, speakers, such as Paul Schmid-Hempel and Deborah Gordon, were able to convey their fascination of their study organism(s) and their research in clear and simple terms.

My study system is bumble bees and their nematodes parasites and I was able to discuss bumble bees (and other bees) with other researchers, from the UK and further afield, particularly bee husbandry in a controlled environment. I was delighted to meet Katsuhiko Sayama from Japan who is studying nematode parasites of hornets, and see his film of a hornet releasing nematode larvae.

I was surprised that my interest in ants has grown, and that I have been converted to termites after a particularly interesting Symposium on ants and termites in agriculture. This included presentations on ants as biocontrol by Renkang Peng, termites as eco-system engineers by Judith Korb, termites and ants boosting wheat yields in areas where there are no earthworms by Theodore Evans and edible weaver ants by Joachim Offenberg – what amazing and useful social insects!

The final plenary lecture by Kenji Matsuura was fabulous. I confess that by Friday afternoon I was wilting a little. This talk about his discovery of termite-ball fungi and how he had named them was both fascinating and entertaining. The final message was perfect to conclude both his lecture, and for me the whole congress: "Please find your own dragon balls to make your dreams come true"!

Crystal Frost

As the nerves set in awaiting my Friday presentation at the 16th congress for the IUSSI, I badly needed to have my mind distracted by some first class science. As someone with a keen interest in parasites in social insects I, like most other people, had particular symposia that really stood out as ones to watch. But what was also really nice about this conference was the broad range of subjects on offer, which allowed some intellectual stimulation for the sake of it. With my brain switched from how does this fit in with my PhD? To, go on, teach me something entirely new! I was greatly surprised by the wide range of interesting talks, even some non social insect biologists had sneaked in and gave some amazing talks. Drosophila sexual differentiation and behaviour was explained in an easily digestible way by Stephen Goodwin who showed some fantastic videos of some sexually confused flies. Kevin Foster's plenary also highlighted that size doesn't matter when it comes to social insect concepts and theories, drawing parallels between some beautiful microbes and our own multi celled social models. Hannah Kokko also inspired with her plenary on group adaptation, with model systems using vertebrates! I think this really brought forward the importance of cross discipline research and communication from and to other fields (and also the excellent work by the organisers for fitting so much into a superbly run conference). But true to myself, the highlight of the conference for me was David Hughes talk on the fungal parasite cordyceps, using a boggling array of experiments he really engaged on the host associations and exploitation strategies by this parasite in a cool and iconic model system. By which time I remembered I had a talk to give, speaking after Steven Valles and Jay Evans, I was definitely in good company. With my nerves calmed by a build up with a very friendly atmosphere and

having been preceded by a conference of interesting topics, scientific backgrounds and model systems, I really enjoyed sharing my work.

**Post-congress Tour to Danish National Parks, IUSSI, August 2010**

After a week of stimulating talks and discussion at the 16th International Congress of the IUSSI, Copenhagen, a group of ant enthusiasts went on to see some social insects in action in the field. The post-congress tour was organised by Mogens Gissel Nielsen, University of Aarhus, ably supported by Dorthe Birkmose. The eleven tour participants were a diverse group, covering five continents of origin, ranging from high school student to professor, and with varied scientific interests – though all keen to become acquainted with Denmark's ants. We started in the National Park Mols Bjerge, a lovely area of sandy heathland, forests and coastal plain in the east of Jutland. Much of the area has been undisturbed by cultivation, due to having soil of such a low quality it was classified in the medieval system as 'evil'. The ants however, take such soil in their strides and thrive. We arrived shortly before sunset, but the group had managed to find at least 9 species of ant in the area around the Laboratory buildings before dark. A walk through the area the next day revealed many more ant species, and a wonderfully rich wildflower and insect biodiversity. We were accompanied by Thomas Secher Jensen, the director of the Natural History Museum in Aarhus, who informed us of the history and management of the area. The introduced Italian broom is a challenge to keep under control, but there are many areas of heather and open scrub in which the native flora are flourishing. The natural beauty and high biodiversity makes this site well worth a visit.

*Mols Field Station, photo B Hoffman*

*Ant hunting in the Mols Bjerge, photo EJH Robinson*

Although the species rich area around the Mols Field Station could no doubt have happily occupied us for days, we made excursions to surrounding areas of the National Park and beyond, including scaling some of the highest 'mountains' in the area (137m) and visiting the coast. During an excursion to the Silkeborg Area we examined some large *Formica polyctena* nests near Vrads Sande, and found *Coccinella magnifica* the seven-spot 'ant ladybird' found only in association with wood ants.

Before leaving Mols National Park, Mogens took us to visit his own special 'ant hill' – a heathland hill with paving stones placed to provided attractive ant nesting sites, which Mogens has been monitoring for 40 years. Lifting some of these stones revealed several different species making use of these sites, and Mogens has been able to monitor the change in ant fauna over time and in response to changes in management.

On our journey away from Mols, we stopped in to see Tofte Skov, some ancient undrained peatlands where we were shown round by Forest Officer Jacob Andersen. The conservation of this important raised peatland habitat faces significant challenges in preventing the water draining away into the surrounding farmland. Some of the site is sparsely wooded areas, and here we were investigated by a herd of curious 'teenaged' wild boar. The site also includes extensive sphagnum bog with several species of sundew.

The second part of the Post Congress Tour took us to the north-west of Jutland, to visit Denmark's first national park, Thy. The park includes coastal areas, dunes, heathland and lakes. We were treated to a privileged tour of Thy from Park Director Else Østergaard Andersen and Forest Officer, Ib Nord Nielsen, who took us to the highlights of this beautiful area. The sites of interest included the only remaining area of mobile sand dunes in Denmark. The last visitor to be given access to this specially protected site was the Queen of Denmark, so we really were being treated like royalty. We were accompanied by a film crew from the local television station who interviewed us about our interest in ants, and filmed us clambering and scrabbling around. A highlight of this day for both us and the film crew was finding several nests of the 'Hercules ant', *Camponotus herculeanus*, Denmark's largest ant species. We also found the guest ant *Formicoxenus nitidulus* workers on the surface of *Formica polyctena* nests, and compiled the first ever ant species list for Thy. In addition to the ants and beautiful flora, we also took some time to look at the birdlife, including crane and huge groups of lapwing... and some of the group were very interested in the abundant chanterelle mushrooms. This wonderful national park seems sadly underappreciated at present, so go and see it before the crowds discover it!

*Formica polyctena, Thy National Park*

*Examining both ants and fungi, Thy National Park*

In addition to the many fascinating habitats we explored, we also made flying visits to several sites of historical and cultural interest, including a stone circle, an early medieval church, a paddle steamer and a local inn or two. Throughout the trip we were excellently fed and looked after, and our days were filled with interesting and varied experiences. Mogens Gissel Nielsen and Dorthe Birkmose executed a tour-de-force in their organisation of this trip, and all the participants are very grateful to them, to the IUSSI for their support, and to all the guides who contributed to make this tour such a success.

Elva Robinson

**Tours 2010**

I would like to share some experiences I got during the meeting in France, 12-16.04.2010. There was a 6th Ecology & Behavior meeting, held in Tours.

This meeting is organized every year in different places in France by and for doctoral students from all over Europe and embraces various topics in biology (population ecology, conservation biology, evolutionary biology etc). The idea of this annual meeting is to present and exchange ideas from all those nice and interesting disciples mentioned above. The meeting consisted of several sessions, each led by internationally recognized invited speaker (for example, James Cook, University of Reading, UK; Alain Lenoir, University of Tours, France and many more). The meeting provided a unique chance to present my work and to meet peers from all over Europe in a friendly social environment, without any of the intimidation or nervousness that may come when presenting at a senior conference. So, I

enjoyed it very much. It was interesting, however, to see the number of nationalities presented. I did some quick calculations and it turned out to be 1/3 French people, 1/3 Polish peop! le and 1/3 other people (including myself). It was probably so, because the meeting was held in France (=highly attractive for French), and similar kind of meeting was later held in Poland, so, all (many) Polish meeting have probably decided to go to another country, just for a change, especially taking into account that it was all but flights paid by the SERL association. The meeting was nicely organized, the food was great (French cousin is outstanding!), people were friendly. I have established several connections and hope to see many of those people in IUSSI Congress in Copenhagen later this year. There was a good entertaining program also, visiting on of the castles in the Loir valley. There were also some nice movies and discussion sessions about evolutionary biology, but, unluckily, everything was in French.

Unfortunately, the were some nuisances as well. The most unpleasant one was the eruption in Iceland. As many other people, I was stuck in Tours for one week longer than I should have. So, while many people were packing up their luggage and going back home by trains, I had to reschedule my flight again and again and finally came by bus and a ferry. Can you imagine a bus from Paris to Stockholm? Now I can…Luckily, there was a good company to keep me awake. Thank you guys!

Lastly, I would like to thank North-European IUSSI section for funding and a great opportunity to visit such a nice conference!

Anton Chernenko, University of Helsinki. 15.05.2010