

IUSSI, North-west European Section (International Union for the Study of Social Insects) Autumn/Winter Newsletter 2009

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<http://www.iussi.org/NWEurope>
Meetings site: <http://www.iussi.org/meetings.html>
Who's who site: <http://www.iussi.org/NWEurope/whoswho.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>. The highlights are listed below:

- **IUSSI North-west European Annual Winter Meeting 2009.**

Please see the end of this newsletter for details of this meeting, including a programme of speakers.

- **Workshop: Microbes to Metazoans: regulation, dynamics, and evolution of social behavior December 2-4, 2009, Georgia Institute of Technology, Atlanta, Georgia, USA.**

Microbes to Metazoans is a 2 1/2 day-long workshop designed to facilitate discussion and collaboration on the study of social behavior. A select group of scientists will discuss and develop new experimental, theoretical, and computational tools to bridge multiple disciplines in the study of group tasks orchestrated by organisms from microbes to metazoans. Topical sessions motivated

by a set of fundamental biological questions will be integrated with quantitative modeling and engineering talks. Applications for participation are now being accepted. There is no cost to attend, but space is limited. Information on workshop and application for participation can be found at: <http://www.socialbehavior.biology.gatech.edu/>

- **26th Meeting of the ISCE, Tours, France, 31 July - 4 August 2010**

The next meeting of the International Society of Chemical Ecology will take place in Tours next July-August. The meeting is being organized by Anne-Geneviève Bagnères and colleagues, which will undoubtedly mean that the usual strong social insect content of these meetings will be maintained and expanded. You can find out more at <http://www.atout-org.com/isce2010/>

- **XVI International IUSI Congress, 8-14th August 2010. Copenhagen Denmark.**

Eight inspiring plenary speakers have been secured, including our very own Section President, Andrew Bourke! Decisions on symposia have also been made, and there is an exciting line up of topics from community ecology and parasitism, to kin recognition and sociogenomics. The detailed list of all 28 symposia, their organizers and invited speakers is now available at <http://www.iussi.org/iussi2010/>. You'll be delighted to hear that registration and submission of abstracts will open very soon, on 1st November 2009 and close on 1st May 2010. An outline day-by-day program for the congress is now available too – be sure not miss the evening out in Copenhagen's famous Tivoli Gardens! Remember you can keep up to date with progress at the Congress website. You can also register to receive email updates on the congress: please send an e-mail with the subject "updates" to: iussi2010@bio.ku.dk. The Organising Committee will soon be advertising a stipend scheme to help junior researchers from developing countries and Eastern Europe participate in the Congress. Details of this will be available on the IUSI website within the next few weeks.

Important Announcements

- **Officer Elections**

Andrew, Rob and I will be stepping down from our positions at the Winter meeting in Sussex this year. In the Spring/Summer newsletter, we announced a call for nominations for new officers. Three new officers were nominated, with no more than one nomination per position and so no vote is needed. We are therefore pleased to announce the following new officer appointments: **Prof. Jeremy Field** will be taking over the role as **President** from Andrew. Jeremy is a Professor of Evolutionary Biology at the University of Sussex. He is an expert on the evolution of helping behaviour in primitively eusocial bees and wasps. His recent work emphasises environmental and genetic components of social plasticity, intra-group conflict and evolution of parental care strategies. **Dr Eamonn Mallon** will be our new **Secretary**: Eamonn is a Lecturer in the Dept of Biology, Leicester University where he studies how immune systems influence behaviour in insects, the evolutionary ecology of host-parasite systems, and diseases of bumblebees and *Drosophila*. **Dr Elva Robinson** will serve as **Treasurer**. Elva recently finished a post-doc at Nigel Franks' Ant Lab in Bristol, where she was using radio-tagging to study ant division of labour and decision-making. She was recently awarded a Royal Society Dorothy Hodgkin Fellowship and will be moving to York University to take this up in January. She will be working on polydomous ant colonies as complex systems, based in the York Centre for Complex Systems Analysis and the York Biology Department. We'd like to thank Jeremy, Eamonn and Elva for agreeing to take these responsibilities on. I'm sure all members will be thrilled to welcome them to their new positions, and wish them all the best with their work for the Section over their three-year term as officers of the IUSI North-west European Section.

- **The IUSI North-west European Web Site**

The web address of our section website has changed, in an effort to make it more memorable. The new address is:

<http://www.iussi.org/NWEurope>

The old web address will continue to function for the foreseeable future, and currently mirrors the information on the new site, but will soon be changed to redirect all internet traffic to the new site.

Why not take this opportunity to reacquaint yourself with our section web site, and, for example, check that your “who’s who” information is accurate and up-to-date (you do have “who’s who” information there, don’t you? If not, you know what to do...)

Any and all suggestions for changes, improvements, job adverts, announcements of meetings, “who’s who” information (hint hint) etc. are welcomed by your section webmaster, David Nash, at DRNash@bio.ku.dk

Section Gossip Column

The TEAM::ANTZZ Labs! (Helsinki)

Summer 2009 was industrious for TEAM::ANTZZ and culminated with a visit to Iceland organized through the Nordic network in Social Evolution. The last (sadly) Nordic Network Symposium was a great success with participation of almost 30 social insect researchers, from five research groups and five countries. After the symposium **Snaebjörn Pálsson** from the University of Iceland hosted a course on “Statistical Inference in Genetics”, with **Snaebjörn** himself, **Jukka Corander**, **Pekka Pamilo**, **Perttu Seppä**, **Jes Pedersen** and **Heikki Helanterä** as teachers. The course has attracted participation from 19 students. In addition to work, many of us also sampled exciting Icelandic cultural adventures - whale-watching while getting frostbite, 250 km on horseback in the wilderness, eating traditional rotten shark and having a beer in hot springs gives you an idea (see the picture).



After Iceland many of us also attended the ESEB meeting in Turin, Italy. After spending the more exciting part of her summer in the saddle of some very cute Icelandic horses, **Lotta Sundström** is busy teaching and anticipates more time for research after her six-year appointment as a council member at the Academy of Finland ends this year. **Heikki Helanterä** is now happily settled back in Helsinki. He is busy trying to get funded, and looking forward to having time to write some papers as well. **Kalle Trontti** has been appointed as coordinator of the Laboratory of Molecular Ecology and Systematics at the university, and can for a while enjoy the advantages and routines of a “proper job”. At the same time he continues his research on superoxide levels and tissue specific protein polymorphisms in *Formica exsecta*. **Emma Vitikainen** continues to sweat over her population genetics data from island populations of *F. exsecta* in order to meet the deadline for her PhD thesis this year. Job hunting for a postdoc is on.... Summer has been busy for **Anton Chernenko** who is now analyzing his data on pre-imaginal learning in *F. fusca*. He is also looking forward to attending the course “From Solitary to Superorganism: The Evolution of Insect Societies”

in November organized in Florence, Italy. **Martina Ozan** continues to enjoy her PhD on reproductive partitioning in the same species. Genotyping piles of eggs and larvae should keep her busy until spring. **Ulla Vattulainen** is in the middle of her Masters' project, looking at differential response to oxidative stress in somatic and germ line tissues in *F. exsecta*. **Hannele Luhtasela** and **Lea Heikkinen** will soon be finished with their Master's theses and think about their future plans. Apart from enjoyable company of **Jelle van Zweden** and **Luke Holman** from CSE, Copenhagen over the summer, the group has also welcomed **Unni Pulliainen** to gain research experience as part of her undergraduate studies.

Martina Ozan

The Boomsma, D'Ettoire, Pedersen, Eilenberg and Nash labs (Centre for Social Evolution, University of Copenhagen)

The big news in Copenhagen is that our CODICES group leader, **Patrizia d'Ettoire** has accepted a full Professorship in Animal Behaviour at the University of Paris. Congratulations! She will start her new position in November. However, all her students have settled nicely in Copenhagen and will stay put. Because of her commitment to her students here, and because she likes the Copenhagen Centre, Patrizia is going to split her time between Paris and Copenhagen in the coming years. Meanwhile, her Masters student **Lena Grindsted** has handed in her thesis "Cuticular hydrocarbons as recognition cues in subsocial spider *Stegodyphus lineatus*". At the same time, a new Masters student, **Janni Larsen** joined the group: welcome! Janni will be working on division of labour in *Camponotus* ants. **Elisa Bresciani**, Cirius fellow from Italy, left this summer after she completed research projects on lizards' sex pheromones and ant communication.

In the fungus-growing ant section, two students have successfully defended their Masters theses. **Pepijn Kooij**, Erasmus student from Wageningen University, supervised by **Henrik de Fine Licht**, **Morten Schiøtt**, and **Koos Boomsma** addressed "Fast-food versus fresh-food: dynamics of fungus garden enzyme activity in the leaf-cutting ant *Atta cephalotes*", and **Marlene Strürup**, supervised by **Susanne den Boer** and **Koos Boomsma**, wrote about "Ejaculate characteristics and paternity in leafcutter ants". **Sze Huei Yek** recently joined CSE as a PhD student, after obtaining her MSc degree with **Ulrich Mueller** in Austin, and has started her work on the evolution of metapleural glands and their secretions. While **Henrik de Fine Licht** works on the last 'bits' of his PhD thesis, **Aniek Ivens** is finishing her five month stay this year, which was part of her dual-academic PhD project at CSE and the University of Groningen, The Netherlands, on the "Evolutionary ecology of an ant-aphid mutualism".

David Nash's group is experiencing all sorts of in- and out-flows. **Matthias Fürst** handed in his PhD thesis "Host exploitation strategies of the social parasite *Maculinea alcon*". He is now applying for funds to work on Bumblebees with **Mark Brown** next year. **András Tartally**, our recently arrived Marie Curie Postdoc, has been offered a permanent academic position back in Hungary, but is currently negotiating for a postponement, to complete his postdoc first. In the meantime a host of students are nearing the end of their projects in the group: Master's student **Erica Ahrenfeldt** will soon be handing in her Master's thesis on behavioural interactions and chemical ecology in the *Maculinea-Myrmica* system, and **Mette Rasmussen**, **Rune Ritz** and **Nicky Nielsen** are in the final writing-up stage of their bachelor projects on different aspects of *Maculinea* dispersal. **Line Vej Ugelvig**, who recently returned from her *Maculinea* phylogenetics work at Harvard, vowed to stay put until she finishes her data analysis and hands in her PhD thesis next year.

The large scale selection experiment of *Monomorium* pharaoh ants from **Jes Søe Pedersen's** group is on-going and under control. PhD student **Anna Mosegaard Schmidt** will take a break from sorting ants day-and-night to go to Naomi Pierce's lab at Harvard for two months for intellectual exchange and further data analysis. Postdoc **Tim Linksvayer** will undergo similar intellectual exchange, but in his case in Berlin. **Rasmus Stenbak Larsen** has started his MSc project by travelling around Europe to sample the invasive garden ant *Lasius neglectus* in nice touristic places, and the fresh live colonies he collected will be used for studies of genetic diversity and competitive ability.

CSE studies on disease defences have continued in **Jørgen Eilenberg's** group at the other campus (**Annette Bruun Jensen, Svjetlana Vojvodic** and **Anja Wynns**), involving among others susceptibility studies of honey bee races to fungal diseases, multiple infections in bees and genetic diversity of fungal strains. Studies on ecological and evolutionary aspects of Hypocreales fungal pathogens are also being performed with both the sexual and asexual fungal life stages (**Sandra Andersen, Nicolai V. Meyling, Bernhardt Steinwender**).

The planning and organization of IUSSI 2010 in Copenhagen is progressing largely as planned. The symposium planning has been finalized and we look forward to interesting contributions to each symposium. The little mermaid welcomes all of you next summer to Copenhagen.

Sze Huei Yek & Aniek Ivens

The Bourke Lab (UEA, Norwich)

This autumn we welcome two new members to the group. **Jacob Holland** is starting a PhD on the influence of the queen on the colony cycle in the bumble bee *Bombus terrestris* and **Tim Huggins** is starting work as a technician on a new research project investigating the effect of social conflicts on ageing in *B. terrestris*. Jacob graduated in the summer at the University of Leeds and Tim graduated this summer right here at UEA. Meanwhile, of current group members, **Edd Almond** has switched to a new role as the postdoc on the project with Tim on ageing and conflict in *B. terrestris*. This project is collaborative with **Joel Parker** at the University of Southampton and will eventually employ a second postdoc at Southampton. **Lorenzo Zanette** and **Christiana Faria** have entered the closing stages of their project on reproductive conflicts inside *B. terrestris* colonies in relation to policing and intraspecific social parasitism, and **Lucy Field** has just started her third year as a PhD student researching aspects of kin selection theory in the ant, *Leptothorax acervorum*. Both Lorenzo and Lucy presented posters at the recent meeting of ESEB in Turin and we're all looking forward to a big outing to the University of Sussex for our IUSSI section's winter meeting in November.

Andrew Bourke

The Brown Lab (Royal Holloway, London)

The London Irish: the Brown research groups continue to run in both Trinity College Dublin and Royal Holloway, University of London. In Ireland, **Caitriona Cunningham** (co-supervised by **Jane Stout**), who was working on the impact of landscapes on pollinators in agricultural pasture-land, has just handed in her MSc thesis. Caitriona has started a new job as an Environmental Educator in the west of Ireland, and we wish her well. **Joe Colgan** (co-supervised by **Seirian Sumner** and **Mark Blaxter**) has been beavering away, extracting RNA from bees and worms. The RNA is currently being prepped and run through the big machines at **Mark Blaxter's** lab in Edinburgh, and Joe is looking forward to the joys of bioinformatics! **Jim Carolan** has been furthering the DNA barcoding work, and has now developed a collaboration with **Paul Williams** (NHM) to investigate barcoding and cryptic species in bumble bee species complexes, whilst at the same time finishing off the DNA barcoding of Irish solitary bees. If anyone has pinned specimens of bumble bees, or knows where there are good collections we might access, we'd be happy to hear from them! At Royal Holloway, we've had productive visits over the summer from **Matthias Fürst** (Copenhagen) and **Shirin Glander** (WWU Münster), both of whom finished small projects on microparasites in bumble bees. In September, my first UK-based PhD student started. **Catherine Jones** is going to be working on patterns of local adaptation between bumble bees and their nematode parasite *Sphaerularia bombi* - again, if you know of populations where this parasite is common in spring queens, we'd love to hear from you! That's about it for now, but we hope that the London group will keep increasing in size and activity!

Mark Brown

The Chittka Lab (Queen Mary's College, London)

There is quite a turnover of people in the Chittka lab this autumn - **Dr. Nigel Raine** has landed a Senior Lectureship at Royal Holloway, University of London and is moving on 01/11, and **Dr. Tom Ings** has been awarded a Leverhulme Trust Early Career Fellowship. While he will stay in the same building, this will mean that he is now formally fully independent, and will be allocated his own lab space and office. **Dr. Mathieu Lihoreau** has joined the team as a postdoctoral fellow on 01/10, and **Kate Hunt** and **Mu-Yun Wang** have started as new PhD students on the same date. **Sarah Arnold** and **Ralph Stelzer** are in the 'writing up' stage of their PhDs, **Helene Muller** is currently in the 3rd year of her PhD project, while **Samia Faruq** is in her 2nd.

Lars Chittka

The Franks Ant Lab (University of Bristol)

Tom Richardson and **Nathalie Stroeymeyt** are now on the third year of their Ph.D.s: Natalie is working on memory and emigration performance in house-hunting ants; Tom is investigating the organisation of work in insect societies, specifically how non-equilibrium statistical mechanics can be applied to the study of collective dynamics. Second-year PhD student **Liz Franklin** is investigating mechanisms and learning within tandem running recruitment behaviour in ants.

Silvia Perez-Espona is conducting landscape genetic analyses to assess the effect of rivers and deforestation in population genetics of neotropical army ants. She is also conducting population genetic analyses to assess the coevolution of army ants with myrmecophile beetles. Geologist **Nic Minter** has joined the Ant Lab, and is using micro-CT scanning and experiments to investigate the time series growth of ant nests and the influence of sediment features on their architecture.

Nigel Franks and **James Marshall** (Computer Science, Bristol) have been awarded a BBSRC grant to study Optimal Decision-Making in Social Insects. Two new post-docs have joined the lab to work on this: **Patrick Hogan** will be focusing on the modelling side of the project, and **Thomas Schlegel** on the empirical side, continuing Elva's work on RFID-tagging ants. **Elva Robinson** has been using RFID technology to study ant division of labour and decision-making, but will be leaving the Ant Lab to take up a Royal Society Dorothy Hodgkin fellowship at the University of York in January. She will be working on polydomous ant colonies as complex systems, based in the York Centre for Complex Systems Analysis and the York Biology Department.

Elva Robinson

The Hughes Lab (University of Leeds)

The Hughes lab is expanding RAPIDLY! In the last month we have gained a post-doc **Geraldine Fazio**, who is working on honeybee colony diversity and how it aids in disease resistance. As well as research fellow **Judith Slaa**, working on genetic diversity and foraging efficiency in *Myrmica* ants.

After a very successful undergraduate program this year, we have spawned three entomological PhD students. **Toby Fountain** working with **Klaus Reinhard** at the University of Sheffield on Bedbugs, **Jacob Holland** working with **Andrew Bourke** UEA on Honeybees and finally **Peter Graystock**, who will be staying with our group, as one of four new PhD students, with **Rowena Mitchell**, **Claire Asher** and **Kirsten Foley**. Pete will be studying bumblebee parasites, together with **Dave Goulson** and **Ben Darvill** of the Bumblebee Conservation Trust, Kirsten will be studying competition between fungal parasites of honeybees, Claire is looking at reproductive dynamics in dinosaur ants, together with **Seirian Sumner**, and finally Rowena will be investigating royal cheats in leaf-cutting ants.

Thankfully we have also gained technical staff to aid in the smooth running of all this research, our new lab manager, **Paula Chappell**, has the lab ship shape and proper. And our new beekeeper, **Bill Cadmore**, is kept busy looking after our substantial experimental apiary of 50 hives. This takes

our group to 13 staff and full time post-grad students, with PhD students **Crystal Frost** and **Katherine Roberts** continuing their quests to investigate host-parasite interactions of leaf-cutting ants and honeybees respectively.

Unfortunately we will be losing two well-loved members of the lab in January. Marie Curie Fellow **Lorenzo Santorelli** is moving to Stu West's group in Oxford, and post doc **Sophie Evison** will be joining Chantal Poteaux's group in Paris. Dropping lab membership to a mere 11.

Sophie Evison

The Martin Lab (University of Sheffield)

Things continue to develop at Sheffield. The NERC-*Formica exsecta* grant with Keele and Helsinki Universities is well under way. We have now chemo-typed all (70+) study colonies in Finland and sequenced all the expressed genes in this species. We have located around 20 genes involved in the cuticular hydrocarbon chemistry in this species, so now it is just a matter of joining up the two datasets along with the genetics. The department have provided funds for a person to help me with the genetic analysis, so the post will be advertised shortly. The NERC-bee grant is well underway with the appointment of **Grainne Long** (PDRA) who was greatly helped by **Helen Leggett** a 4th yr (MSc) student who sequenced many DWV strains for her project and was awarded the departmental prize for the top project in her year. Helen has gone to Oxford to do a PhD and we wish her well. Helen's shoes have been filled by Ammie, who is learning the ropes. The new environment centre, which houses the social insect team, has had the seal of approval by the VC who enjoyed getting into a bee suit and up close with the bees. The BBSCR-CASE studentship was awarded to **Ricky Kather** who is continuing her studies into the nest-mate recognition system of honeybees. This has gone very well, so watch this space. We continue to attract funding as I have just been awarded a NERC grant to visit Hawaii to study the spread of Varroa and its affect on the viral landscape. Our list of collaborators continues to grow and with 12 papers coming out of the lab this year, things are going very well. We have two overseas PhD students aiming to start in 2010. I hope to have a new lab web site up and running soon. Unfortunately, I will miss the IUSSI meeting in Sussex but Hawaii was a more attractive option.

Steve Martin

The Paxton Lab (Queen's University Belfast)

As ever, there have been some departures, some arrivals, and the promise of grant monies to come. Over the past 6 months, **Antonella Soro** has submitted and successfully defended her PhD thesis on the origins of sociality in sweat bees (submitted to the University of Tübingen, Germany) and **Emma Seale** has just submitted hers (to Queen's) on the conservation biology of the marsh fritillary butterfly. Though this butterfly is not known to be very social when adult, it is very much so in the caterpillar stage, when 200 or so early instar larvae spin a large communal web in which they reside. Emma awaits her viva. Antonella, meanwhile, continues in the Belfast group, postdoc-ing on the conservation genetics of Mexican bees with colleagues in Merida, Mexico City and San Cristobal (all Mexico), Murcia (Spain) and Halle (Germany), part of a new CONACYT/EU collaborative project called MUTUAL (Mutualisms with bees in tropical landscapes: risks and rescue for biodiversity and crop production) and run by **Remy Vandame** of ECOSUR in San Cristobal.

Lorriane McKendrick has now formally joined the group as a PhD student to work on bumble bee pollinators (landscape genetics) and pollination in Northern Ireland. So she is currently churning through DNA extracts and microsatellite genotypes. **Emily Davis** continues her PhD studies into the conservation genetics of the northern bee *Colletes floralis* and **David Trew** continues his on social evolution in the facultatively social sweat bee *Halictus rubicundus*. We have also welcomed back **Orlando Yañez**, fresh from a field season with Ingemar Fries (SLU, Uppsala, Sweden) on virus transmission in honey bees. Orlando is now in his final year of his PhD so will be spending the winter in analysing and writing his thesis. **Taina Conrad**, a PhD student from **Manfred Ayasse's** lab at the University of Ulm (Germany), complements the working group for 3 months, ostensibly to genotype *Osmia rufa* bees for a series of experiments on mate choice in this

widespread European species. Finally, **Dr Manuela Giovanetti**, a Madame Curie postdoc working on social evolution in sphecid wasps, has taken a short break but should be back in business in Belfast in early 2010.

The grant promise to which I initially alluded is a new EU project, coordinated by **Robin Mortiz** of the University of Halle (Germany), on honey bee diseases. Named BEE DOC (BEEs in europe and the Decline of hOneybee Colonies), this is the major EU funding for honey bee research for the coming 3 years that aims to understand better the large-scale losses of honey bee colonies that have been reported over the recent years. As a partner, one of ten, the group at Belfast will be engaging a postdoc in early 2010 (a position yet to be advertised) to work on honey bee pathology, specifically the interaction between disease organisms and pesticides on honey bee mortality.

Some personal news from Rob is that he and **Antonella Soro** are currently on sabbatical for the next few months at Cornell University, upstate New York (brrr brrr – think snow and ice), in **Bryan Danforth's** lab (see: <http://www.danforthlab.entomology.cornell.edu/content/view/visiting-scientists.html>). So while he is away, writing, burying himself in phylogenetics and genomics, the lab at Belfast is being ably run by Emily and Lorraine. Well done, ladies. And thank goodness for email!

Rob Paxton

The Raine lab (Royal Holloway, London)

In November I join the School of Biological Sciences at Royal Holloway, University of London as a Senior Lecturer in Animal Behaviour. I will continue using my successful approach of linking lab and field studies to investigate how variation in bumblebee cognitive performance might be adapted to particular environmental conditions. Moving from the heart of London's east end to leafy Surrey will definitely be a shock to my system - it will be interesting to see how the change in environment affects the bees. This is a very exciting time for me. Whilst I will be sad to leave Queen Mary, University of London after almost 6 years, I am really looking forward to setting up my own lab. Once my group is up and running alongside **Mark Brown's**, Royal Holloway will be approaching critical mass for social insect study. I am not sure the collective noun for Bombologists, but it seems we will soon need to find out.

Nigel Raine

The Ratnieks Lab (University of Sussex)

Eco-hero Francis hits the headlines! Eco-heros are usually TV celebrities etc. To have a scientist as an eco-hero is quite something for the books, and can only increase the profile of biology (especially social insect research) in the public and media eye (see next page for Francis' full page spread in the Telegraph).

Editor

The Sumner Lab (Institute of Zoology, London)

Seirian, R.A. **Solenn Patalano**, PhD student **Thibault Lengronne** and post-doc **Stephanie Drier** had a very successful few months field work in Panama, radio-tagging *Polistes* wasps. After fighting a losing battle with development companies over access to our beloved (bullet-infested) field sites near Panama City, we finally settled for a new field site on the Caribbean coast (nice!), near crime-ridden Colon (not so nice!). Our only complaint was that there were too many wasps (I know what you're thinking – there can never be *too many* wasps....)! Back in London, Solenn is now working on the *Polistes canadensis* transcriptome, and Thibault is busy in **Laurent Keller's** lab in Lausanne doing microsatellite analyses on the drifting wasps he found in Panama. We were delighted to have another *Polistes* enthusiast join us in London for a month in September: **Alessandro Cini**, **Rita Cervo's** PhD student from Florence, visited our lab to do some real-time quantitative PCR analyses on *Polistes* social parasites and their host. We look forward to welcoming new PhD student **Claire Asher** (co-supervised by **Bill Hughes**, Leeds) next month for training on radio-tagging techniques for her project on dinosaur ant reproductive conflicts.

Seirian Sumner

Eco hero The honeybee expert

Email ecohero@telegraph.co.uk

Francis Ratnieks is Britain's only professor of apiculture. He has studied the honeybee all over the world, and has begun a five-year project at the University of Sussex to investigate its decline. **Interview by Sarah Stephens**

The number of honeybees in Britain has been in decline for 100 years. It is this general long-term decline that we need to reverse, not just the recent disappearances. One hundred years ago there were a million hives in this country, now there are only a quarter of a million.

The biggest short-term problem is disease. There are many diseases that affect the honeybee. We've had the varroa mite for 20 years in this country – it breeds in the honeycomb cells. We used to control it using chemical strips, but that no longer works because the mites have become resistant. Part of our work is to find the best ways to control it.

In the long run, the problem is a lack of flowers. The British landscape has become less good for bees. People have suggested that all sorts of things might be responsible for the decline, from mobile phones to insecticides. The mobile phone argument has been discredited. Insecticides are a very minor concern, and we have the data for that. Insecticide deaths of honeybees have actually dramatically declined.

Last October I helped start a £2 million project: the Sussex Plan for Honeybee Health and Wellbeing. So far we have raised £500,000, through donations from the public and businesses. One part of the project is breeding disease-resistant hygienic black honeybees – our native British bee – which help to clean out the hives and keep them free of disease. We also want to provide breeder queens to beekeepers so they can breed their own queens.

We are particularly interested in wellbeing, asking how good the British landscape is for honeybees. For this we need to decode the bees' waggle dances to determine where they are

One hundred years ago there were a million hives in this country, now there are only a quarter of a million

foraging. The bee repeats the same message many times. The amount of time the bee waggles tells the other bees the distance to the nectar source: if it takes two seconds to waggle, the source is 200 yards. The direction of the flowers is indicated by the angle of the bee's body.

Bee colonies have a very effective policing system. Worker bees kill eggs laid by other workers, so that only eggs by the queen are raised. It makes for a much more harmonious colony. It's like a human policing system. The worker bees solve the 'crime' of the egg being laid, and our research shows it also prevents crime – it stops more eggs being laid.

Photograph by Will Woods

Next week: Monty Don



I have one simple recommendation: **appreciate the natural world** and realise we are dependent on it for survival. This is as true today as it was for our hunter-gatherer ancestors. The only difference is that we sometimes forget it. The natural world can also be a source of great beauty. So please do the following: **relax for a few minutes in a garden or park** where you can see some honeybees buzzing from flower to flower – Yeats dreamt of living near a 'bee-loud glade', and this glade is on your doorstep. Consider, too, that **these small insects are essential to agriculture** and also amazing in their own right, living in a complex society with sophisticated communication systems and law and order in the hive. Their work as pollinators is one of many things we take for granted. **The honey and wax is a bonus.**

MY TIPS

ILLUSTRATION BY TUCKY WOODS

Conference Reports

Report on the 12th Congress of the European Society for Evolutionary Biology

This summer I was fortunate enough to attend the 12th Congress of the European Society for Evolutionary Biology in Turin, Italy, thanks to funding provided by the IUSI and the Salter Charitable Trust. Thirty-one symposia were held over five days covering a wide range of topics ranging from the evolution of early life-forms to recent applications of evolutionary biology. The conference offered a fantastic opportunity to learn about cutting-edge research across many different fields of evolutionary biology, including social evolution (my own area of research). A particular highlight of the conference for me was the poster session in which I took part. I very much appreciated the opportunity to discuss and receive feedback on my own work in such a friendly and enthusiastic environment. Other highlights of the congress included two symposia and a plenary lecture on social evolution, as summarised below:

The evolution of cooperation and conflict: when theory meets data

The research discussed in this symposium (organised by Suzanne Alonzo and Stuart West) explored a number of social interactions where cooperation and conflict must coexist. The first presentation was given by Allen Moore on biparental care and the importance of considering both cooperation and conflict in understanding the behaviour. Michael Cant then followed with a presentation on his work with banded mongooses and the role of threat within societies, highlighting the need to better understand how and when threat becomes a useful tactic in social interactions. Other presentations in the symposium discussed the co-existence of cooperation and conflict within parent-offspring interactions, group living, mutualism between species, and cooperative breeding, ending in a talk by Ammotz Zahavi on the potential link between cooperative behaviour and the handicap principle. Overall the presentations highlighted the importance of understanding the role of both cooperation and conflict in social behaviour, and offered a number of interesting insights into potential causes of cooperative behaviour and mechanisms of conflict resolution.

The evolution of genetic caste determination in social insects

On the second evening of the congress, Tanja Schwander, the winner of this year's John Maynard Smith prize, gave a plenary talk on the evolution of genetic caste determination in social insects. The presentation began with a description of how there is a growing amount of evidence to suggest that genetic factors play a large role in deciding the caste fate of female eusocial insects, despite the traditional view that caste determination is mainly influenced by environmental factors. Tanja Schwander then presented her work on *Pogonomyrmex* harvester ants, a genus in which she found caste determination to be strongly influenced by genetic factors (such as whether a queen uses the sperm of a male from her own distinct genetic lineage or from another) and maternal effects (such as the age of queens and their previous exposure to cold), but not by the environment experienced by the brood themselves.

Selective forces shaping transitions to social life

The presentations in this symposium (organised by Trine Bilde and Patrizia d'Ettorre) discussed a number of selective forces that may be responsible for the evolution of social behaviour. The talks covered a wide range of social behaviours from multicellularity to eusociality. Three presentations were particularly relevant to social insect biology, starting with Jacobus Boomsma's opening presentation on the importance of life-time monogamy in the evolution of eusocial behaviour. Michel Chapuisat later discussed the importance of parasites in the evolution and maintenance of complex social behaviours, using ants and parasitic fungi as an example, and Jeremy Field followed with a fascinating talk on the effect of genetic and environmental factors on the social behaviour of halictid bees. The link between dispersal and social behaviour featured as a strong theme across a number of talks. Yael Lubin described how the loss of dispersal in African social spiders has led to the evolution of behaviours to reduce the associated risks of disease and local resource competition. Ben Hatchwell gave a talk on how dispersal plays a strong role in the formation of kin-structured, avian groups, but how other factors such as demographic processes

and life-history may also play significant roles in the formation of kin groups. Michael Hochberg also spoke on the relevance of dispersal, this time on its role in the evolution of multicellularity.

I would like to finish by thanking the IUSSI for providing me with the funding to attend the event, and by strongly encouraging anyone who has the opportunity to take part in the next ESEB congress to do so.

Lucy Friend

Job Vacancies

Web-wonder David Nash is keeping an excellent record of vacancies in the social insect world on the IUSSI British Section webpage <http://www.iussi.org/NWEurope/vacancies.htm>. Please check it for jobs you might be interested in, and also keep him informed about any jobs coming up in your labs. A few tasters below:

PhD studentship: conservation of pollinating insects, University of Nottingham

£12,500 per annum (plus £3000 research expenses budget) and tuition fees (UK/EU) for 3 years.

The University of Northampton invites applications for the Finnis Scott Studentship, a PhD research project investigating factors affecting the conservation of pollinating insects in the English countryside. The successful applicant will be based in the Landscape and Biodiversity Research Group of the School of Applied Sciences, but will be collaborating with the Division of History in the School of Social Sciences. The supervisors for the project are Dr Jeff Ollerton and Professor Jon Stobart.

Insects such as bees, flies and butterflies provide an essential ecosystem service by pollinating crops and wild plants. However there is growing evidence that pollinator numbers have declined significantly due to rapid environmental change, particularly habitat loss, intensive agriculture and climate change. This Doctoral research project will study pollinator diversity in the gardens of large English country houses and relate this to both the horticultural continuity of those gardens and factors such as the availability of suitable habitats in the surrounding landscape. Although the main focus of the research is ecological, it will take an explicitly cross-disciplinary approach involving both examination of garden records, such as planting schemes in historical archives, and ecological surveys of insects in the gardens. Therefore in addition to having an ecological/environmental background, the successful applicant will have a strong interest in British history.

Applicants should possess a good Honours or Masters Degree in the area of ecology, biology or geography. Due to the significant amount of field work involved, a full, clean driving licence valid in the UK is essential. Deadline for applications: 10.00 am on October 30th, 2009. It is intended that interviews will be held on the 11th November, 2009. Start date: 4th January 2009 or to be negotiated thereafter, but must be prior to the induction programme which will be delivered in February 2010.

For an application pack, please email: david.watson@northampton.ac.uk or call 01604 892812. More information about the Landscape and Biodiversity Research Group can be found at: <http://oldweb.northampton.ac.uk/aps/env/lbrg>. Additional informal enquiries can be made to jeff.ollerton@northampton.ac.uk. Please quote reference: UN09FINNIS

Two PhD positions: sensory ecology of orchid bees, University of Düsseldorf

Evolution of male perfume signals and scent-driven speciation in orchid bees

I am looking for two highly motivated PhD candidates to study the evolution of male perfume signals in neotropical orchid bees (Apidae: Euglossini). One candidate will use a comparative approach and investigate shifts in perfume composition and sensory perception in a broad

phylogenetic context. The other will perform case studies and behavioral experiments to test hypotheses concerning the evolutionary causes that underly male perfume collection and perfume differentiation. Both will have the opportunity to travel to Central America for field work and are expected to cooperate closely with each other. Lab methods include molecular genetic (sequencing, microsatellites), electrophysiological (EAG, GC/EAG), and chemical analytical (GC/MS) techniques. For more information, please contact me directly or visit my web site.

Ideal candidates would have a strong background in evolutionary biology and behavioural/chemical ecology, have excellent organizational skills and good knowledge of written and spoken English. Previous experience with bees and independent field work abroad is beneficial. A Diplom/M.Sc. degree in Biology or a related subject is required.

Applicants should send a cover letter, C.V., list of publications, a statement outlining past research experience and particular motivation for the position (max. 2 pages), and contact details of 2-3 referees (all in a single pdf file) to eltz@uni-duesseldorf.de. The positions (TV-L 13/2) are funded by the Deutsche Forschungsgemeinschaft for three years, and candidates should begin working by the end of 2009/early 2010. Closing date for applications will be 31 October 2009. Interviews will be held in November.

PD Dr. Thomas Eltz, AG Sinnesökologie, Universitätsstr. 1, 40225 Düsseldorf,
Phone 0049-211-8113413.

<http://www.biologie.uniduesseldorf.de/Institute/Sinnesoekologie/Chemical-Ecology-of-Bees>

Ph.D. fellow in Social Insect Pathology

Faculty of Life Sciences, University of Copenhagen

Department of Agriculture and Ecology wishes to appoint a Ph.D. fellow in Social Insect Pathology from July 1, 2010, to June 30, 2013

Job description

The aim of the project is to study insect pathogenic fungi from the orders Entomophthorales (genus *Pandora*) and Hypocreales as they affect ant hosts of the genus *Formica*. The studies will include some combination of the following components: 1) Field prevalence and the temporal-spatial distribution of infections, 2) Genetic diversity of host and pathogens, 3) Host behaviour towards infected nestmates, 4) Pathogen manipulation of behaviour of infected host ants, 4) Influence of environmental factors on infection processes, 5) Additional relevant trophic interactions (for example aphids/ants/other fungi). The studies are part of the national centre of excellence, Centre for Social Evolution, www1.bio.ku.dk/english/research/oe/cse

The appointee should ideally have qualifications within several of the following areas:

- Entomology
- Microbiology or mycology
- Ecology or Evolutionary biology
- Molecular biology

Qualification requirements

In connection with the appointment to the post special importance will be attached to the applicant having the professional and personal qualifications stated below:

- Passed Master's degree in relation to the above subject area(s)
- Ability and interest to work with social insects and microorganisms

The Ph.D. fellow is also required to have research potential, to be enterprising and to possess good interpersonal skills.

Terms of employment

The post will be filled according to the Agreement between the Danish Ministry of Finance and the Danish Confederation of Professional Associations. The post is covered by the Protocol on Job Structure.

The position as Ph.D. fellow requires the applicant to be approved for admission to the Ph.D. programme at LIFE when accepted for the post.

Questions

For further information about the post, please contact professor Jørgen Eilenberg, Department of Agriculture and Ecology, University of Copenhagen, on tel: (+45) 35 33 26 92 or e-mail jei@life.ku.dk, or associate professor Annette Bruun Jensen, Department of Agriculture and Ecology, University of Copenhagen, on tel: (+ 45) 35 33 26 62 or e-mail abj@life.ku.dk

General questions regarding Ph.D. programmes should be directed to Course Administration c/o special advisor Michael Cleve Hansen, tel. + 45 3533 2056 or head clerk Lillian Zeuthen Bjørnseth on tel. +45 3533 2172. Further information on Ph.D. programmes is available at www.life.ku.dk/English >Education > PhD Education > Regulations.

Application

The application should be submitted in 2 (sorted) copies; therefore it's not possible to receive the application by e-mail. The application must include a reply e-mail address. Each application must include the following appendices marked with the stated appendix numbers:

Appendix 1: curriculum vitae with documentation of education.

Appendix 2: material required for expert assessment (including publications, if any)

Appendix 3: a sketch of suggested research questions with reference to the announcement and applicants own qualifications (max 2 pages)

In addition to the material the applicant wishes to be included in the assessment, the Assessment Committee may include further material in their assessment of the applicant. In such circumstances, it is the responsibility of the applicant, on request, to send the material to the Committee.

Following processing of the application, any application material sent will be destroyed.

Receipt of the application will not be acknowledged, but the applicant will be kept continuously informed of the progress of the application.

The applicant will be assessed according to the Ministry of Science Technology and Innovation Executive Order no 284 of 25. April 2008.

The application, marked 625/05253-184 should be sent to **The Faculty of Life Sciences, Department of Agriculture and Ecology, The Secretariat, Thorvaldsensvej 40, stairway 2, 3rd floor, DK – 1871 Frederiksberg C.**, where it must be received no later than **December 21, 2009 at 12.00 noon**. Applications received after the closing date for applications will not be considered.



Winter meeting 2009

The winter 2009 meeting of the North-West European section of IUSSE will take place at the University of Sussex on Thursday and Friday, 26-27 November.

We are looking forward to an exciting meeting with 27 talks during the two days. We are particularly pleased to announce Prof. Tim Clutton-Brock (University of Cambridge) as our plenary speaker. He will give a talk about the evolution of mammalian societies.

Location

Sussex University is located on the outskirts of Brighton and is very easy to reach by train, bus or car. It is 5 minutes walk from Falmer railway station, with bus stops on campus as well. Brighton is a lively, cosmopolitan, seaside town. The closest airport is Gatwick, about 50 minutes by train from Falmer via Brighton, with 2 or more trains per hour to Brighton.

The meeting will take place in the Freeman Centre. See campus map (<http://www.sussex.ac.uk/aboutus/findus/documents/campusmap.pdf>), building No. 43. This is c. 5 minutes walk from Falmer railway station.

Provisional Schedule

Thursday 26th November

| | |
|--------------|---|
| 11.00 | Coffee and Registration |
| 11.30 | Introduction |
| 11.35 | Christian Peeters (Paris, France): Why re-evolve ant workers capable of having sex? |
| 11.55 | Elli Leadbeater (Sussex, UK): Teasing apart indirect and direct fitness as drivers of helping behaviour |
| 12.15 | Emma Vitikainen (Helsinki, Finland): Effects of inbreeding in the ant <i>Formica exsecta</i> |
| 12.30 | Eric Lucas (Sussex, UK): TBA |
| 12.45 | Margaret Couvillon (Sussex, UK): The hows and whys of size polymorphism in bumble bees (<i>Bombus impatiens</i>) |
| 13.05 | Lunch - provided |
| 14.05 | Plenary: TBA |
| 14.50 | Martin Kärcher (Sussex, UK): Killing the wrong kind of eggs: the cost of worker policing |
| 15.05 | Lorenzo Zannette (UEA, UK): Policing in the bumble bee <i>Bombus terrestris</i> |
| 15.25 | Richard Gill (Hull, UK): Novel policing behaviour regulates royal reproduction |
| 15.40 | Heikki Helanterä (Helsinki, Finland): TBA |
| 16.00 | Coffee and poster session |
| 16.45 | Lucy Friend (UEA, UK): Testing for within-colony kin discrimination in a multiple-queen ant, <i>Leptothorax acervorum</i> |
| 17.00 | Susanne de Boer (Copenhagen, Denmark): Sperm competition and the effect of queens on ejaculate interactions in social insects |
| 17.15 | Jonathan Green (Sussex, UK): Exploitation of a host status signal by a social parasite |
| 17.30 | Helene Muller (QMUL, UK): "Personality" in bumblebees: do individuals vary consistently in their response to novel colours? |
| 17.45 | Henrik de Fine Licht (Copenhagen, Denmark): The role of enzymes in fungus-growing ant evolution |
| 18.00 | Drinks |
| | |
| 20.00 | Meal |

Friday 27th November

| | |
|--------------|---|
| 10.00 | Francis Ratnieks (Sussex, UK): Darwin's difficulty |
| 10.20 | Silvia Perez-Espona (Bristol, UK): Landscape genetics of a top neotropical predator: the effects of habitat fragmentation on the army ant <i>Eciton burchellii foreli</i> |
| 10.40 | Matthias Fuerst (Copenhagen, Denmark): TBA |
| 10.55 | Ulla Vattulainen (Helsinki, Finland): The difference in the production of reactive oxygen radicals between germ line and somatic tissue in the ant <i>Formica exsecta</i> |
| 11.10 | Karen McComb (Sussex, UK): TBA |
| 11.30 | Coffee |
| 11.55 | Nathalie Stroeymeyt (Bristol, UK): Private versus public information in house-hunting ants: how emigrating colonies exploit previous knowledge of their environment |
| 12.10 | Mike Clease (Sussex, UK): TBA |
| 12.25 | Tom Richardson (Bristol, UK): Record dynamics in ants |
| 12.40 | IUSSI Business Meeting |
| 13.25 | Lunch – on your own around Sussex campus |
| 14.40 | Plenary: TBA |
| 15.25 | Tomer Czaches (Sussex, UK): The roles of private and social information during foraging in the black garden ant, <i>Lasius niger</i> |
| 15.40 | Rebecca Hayward (Bath, UK): Emergency Resource Distribution in Ant Colonies |
| 15.55 | Paul Graham (Sussex, UK): TBA |
| 16.15 | Coffee and award of prize for the best talk |
| 16.30 | End of meeting |

Accommodation

There are a number of accommodation options available, depending on your budget. Unfortunately there are no accommodations near the campus in Falmer, so guests will need to stay in Brighton. Check here for those with whom the University of Sussex has negotiated special rates: <http://www.sussex.ac.uk/aboutus/findus/wheretostay.php>

The budget hotels and B&Bs will mostly require you to take a bus into the University. The buses run regularly but will take about 30 minutes. If you go to the above website, we can recommend under the category of "B&B/Small Hotels", Twenty-One, Amblecliff, Oriental Hotel, and Gullivers. Under "Standard hotels and Guest Houses", we can recommend Premier Inn for just your basic lodge. If you are willing to pay a bit more, then probably it would be easiest to stay right next to the rail station. The most convenient is Jurys Inn, where you can walk to the station in < 5 mins.

<http://brightonhotels.jurysinns.com/>

Please remember when making your reservation to say you are with the University of Sussex. Also note that there are two Universities (Sussex & Brighton), both of which are located in Falmer (same rail route and similar bus routes).

Talks and posters

Student talks are 15min (c. 12 minutes talk plus 3 minutes discussion), post-doc/non-plenary talks 20 min (17min plus 3min) and the plenary talks are 45min (40min plus 5min). Posters will be displayed during the poster session. Attendees are encouraged to bring a poster and stand by it during this session. There will be prizes for the best student talk and the best poster at the end of the meeting.

Costs

The registration fee is £10 for students, £20 for all other participants. This fee includes 1 lunch (Thursday) plus coffee/tea and fruits/biscuits during the breaks. The conference dinner on Thursday will cost an additional £8 (2-course Italian meal plus a glass of wine). The restaurant *Donatello's* is located in the attractive area (The Lanes) in central Brighton.

Please tell us if you plan to attend the meeting only or the meeting plus the dinner. This makes it easier for us to organise lunch, dinner and the breaks. You may email this information to c.grueter@sussex.ac.uk.