

Biology at Staffs.

Hello, and welcome to the third edition of Biology News, the newsletter of the Biology field at Staffordshire University. The newsletter features the activities of Biology staff and students, with news of research and publications, courses, prize-winners and more.

See our space on the university website for more news and information:

http://www.staffs.ac.uk/faculties/sciences/news_and_events/news_archive/biology_news_spring_summer_2010.jsp

West Midlands Biomedical Science

Biological and Biomedical Sciences hosted the March meeting of the West Midlands Biomedical Science Professional Development & Workforce Planning Group. This group comprises training officers and laboratory managers from pathology laboratories throughout the West Midlands as well as representatives from the regional HEIs offering accredited Biomedical Science degrees. The focus of the group is to monitor and adjust training requirements in line with changes to the local workforce. This requires close liaison with the HEIs as providers of training and provides a co-ordinated approach to the provision of clinical placements for our undergraduate students. Through this group Pete Gowland has made contact with training officers from all over the West Midlands. Pete gave a presentation on the courses we offer and our approach to training students in Staffordshire and Shropshire. He has also attended two training workshops which have focused on the training and providing evidence for the registration and specialist portfolios.

International Symposium



Staffordshire University's Professor John Dover was one of the organisers of Butterfly Conservation's 6th International Symposium: **"The 2010 target and beyond for Lepidoptera"** held in Reading 26th-28th March 2010 as part of the charity Butterfly Conservation's contribution to the International Year of Biodiversity.

The meeting addressed the key target of halting biodiversity loss for butterflies and moths by 2010, which was set across Europe almost a decade ago. There were reviews of progress from the UK, Europe, and countries throughout the world, as well as the latest science on how to reverse declines and conserve habitats. The Symposium concluded with an analysis of future challenges, including the impact of climate change.



John Dover with Butterfly Conservation chief executive Martin Warren, President David Attenborough, Chair of the BC Council Maurice Avent and keynote speakers Chris van Swaay and Sebastian Winkler.

As well as organising the conference, John gave two talks about his own research. The conference papers will be published in a special edition of the Journal of Insect Conservation and also simultaneously as a hardback book called *'Lepidoptera in a Changing World'*.



Finnish PhD

John Dover has been asked to examine the PhD thesis of a Finnish student. Johan Ekroos, a student of Juha Tiainen and Mikko Kuussaari at the University of Helsinki, is about to finish his PhD thesis on "Effects of management and landscape structure on biodiversity in boreal agricultural farmland". The examination is done in two phases - a pre-examination which determines whether the thesis can go forward for public examination, and then the final public oral examination itself. John has also recently examined PhD theses from Oxford Brookes University and Aberdeen University and an MSc by research from Warwick University.

Train the Trainers

Biological and Biomedical Science, in conjunction with Keele University, are running a Train the Trainers workshop for training officers in Biomedical Science. Ian Davies, Pauline Gowland and Glenn Hussey have developed a half day programme at the request of the Shropshire and Staffordshire Co-terminus Liaison Group. This training is essential to ensure that the IBMS training standards are met. It will also provide the opportunity to discuss issues which arise during the students' clinical placements and to identify and share good practice between the hospital labs and the two universities.

West Midlands Regional Training Officers Workshop

Pete Gowland gave a presentation at the West Midlands Regional Training Officers Workshop on MSc provision for Biomedical Scientists on 17th November. This was attended by training officers from a variety of disciplines within biomedical science throughout the west midlands region. The programme was designed to discuss training and presentation of evidence for the portfolio required for the award of Specialist Diploma.

Fungus Research

For several years a small research group at Staffordshire University (Dr Arthur Callaghan, Ian Hopkins, the late Steve Waters and Dr Rob Manning) has studied the biology of fungi of the genera *Conidiobolus* and *Basidiobolus*. These are close allies of the important group (Entomophthorales) researched world-wide as potential control agents of agricultural pest insects and mites. Strains of the test fungi used in the work are from a small plantation of hybrid larch at Keele, in an area repeatedly sampled as a model habitat.

For the mainly saprotrophic *Conidiobolus* spp., there are very few reports on the interactions of our fungi with invertebrates of soil and litter (living or dead) and on the subsequent outcomes of such interactions. The research directly addresses questions on trophic (feeding) abilities of these fungi and on the behaviour of their spores (conidia). For example, in laboratory studies, the researchers quantitatively compared the ability of *Conidiobolus* spp. (and *Basidiobolus ranarum*) to colonise groups of leaf litter arthropod cadavers (mostly mites and collembola) and plant fragments. Also, novel methods were used to disclose the ability of a number of *Conidiobolus* spp. to kill arthropods of the mesofauna. The overall aim was to get at least a preliminary indication of the type of trophic interactions occurring between the selected *Conidiobolus* spp. and a range of freshly extracted arthropods from the surface and subsurface larch litter.

Ongoing work is aimed at understanding the effect of arthropod cadavers, or other substrates, on conidium germination. In leaf litter, cadavers may be a nutrient-rich substrate for species of *Conidiobolus* and *Basidiobolus*, with the potential to act as triggers for localised vegetative sprouting of conidia prior to any subsequent fungal colonisation. The effects of substances leaking from arthropod (mite and collembolan) cadavers, diffusing into a surrounding water agar medium and initiating spore germination is being explored in laboratory experiments.



Following on from preliminary studies, future work will examine the variation of the germination of conidia on the external surfaces of invertebrates to disclose possible specific animal targets.

Right: Photograph of *Conidiobolus adiaeretis*, which shows a germ tube that has travelled along the leg of a mite and formed a conidium

Publications

Settele, J.; Dover, J.; Dolek, M. & Konvička, M. (2009) Butterflies of European ecosystems: impact of land use and options for conservation management. In: Josef Settele, Tim Shreeve, Martin Konvička and Hans van Dyck (eds.) *The Ecology of Butterflies in Europe*, CUP, Cambridge, pp.353-370.

Dover, J.W.; Dennis, R.H.L. & Atkins, L. (2009) The western jewel butterfly (*Hypochrysops halyaetus*) II: factors affecting oviposition within native *Banksia* bushland in an urban setting. *Journal of Insect Conservation*, 13, pp.487-503.

Skingsley D.R. (2010) Investigation of mucus using Fourier transform infrared spectroscopy. *Spectroscopy Europe*, 22(1):10-13

STEM Challenges

Kevin Reiling and Sara Buckley are now STEM ambassadors. Being a STEM Ambassador is about promoting your skills to young learners, actively encouraging them to enjoy STEM subjects (Science, Technology, Engineering and Maths), and informing them about the unique career opportunities that are available to them. Sue Bird will very shortly also become an ambassador. Anyone interested in being involved in *Science working for you* projects (or in becoming an ambassador) should contact Sara or Kevin.

Sara Buckley has attended training at the Birmingham Think Tank to be a judge for Regional STEM Challenges.

STEMNET is co-ordinating a series of exciting STEM Challenges, each of which has been inspired by the London 2012 Olympics. This is an official London 2012 partner project.

STEMNET is working with the London Organising Committee of the Olympic and Paralympic Games Ltd (LOCOG) to deliver a series of ten hands-on challenges for Key Stage 3 pupils in schools across the UK. Sara will be involved in judging teams of young people who rise to the challenge. The challenges are themed around the Games and the associated Science, Technology, Engineering and Mathematics.

Dave Skingsley gave a talk for STEM Week at Mary Webb School and Science College, Pontesbury. The school's organiser sent this message of thanks to all those who had participated in the event.

"I would like to say a massive thank you to each of you for making STEM week so successful. Your hard work contributed to raising the profile of STEM related careers within our school and in some cases our partner schools as well. I do sincerely hope that you benefitted from the experience because I know how much our students did. Hopefully we will get the opportunity to work with you again in the future."

We're on our way to Wembley



From left to right – Liz Deakin, Audra Jones, Sue Avery, Rosie Jones and Sara Buckley



Mishela Barrigas and Nadia Abdul-Karim meet David Bellamy

On Thursday 15th April a group of twelve staff were among 800 visitors who attended the Fisher World exhibition "Science World 2010" held at Wembley Stadium. This is an event that is held every year where Fisher Scientific invites their suppliers to meet the people who buy their equipment and supplies. There were over 75 exhibitors running Science World competitions and demonstrating and displaying world-leading laboratory equipment. There were two guest speakers; Professor Lord (Robert) Winston and Professor David Bellamy who gave informative and humorous talk sessions. There was also the chance for visitors to tour the stadium. While on the journey round they got the chance to see the FA Cup up close and personal.

Student Publications

For the third year running students from Biological Sciences have been successful in submitting and having published a paper based on their final year projects in the Oxford University Press journal **Bioscience Horizons**. John Dover's students Laura Price and Keely Smith graduated in 2009 and were nominated to submit their papers to the journal by the department. The papers were reviewed and chosen for publication in this year's number of the Journal.



Keely's paper "Factors affecting the abundance and size of *Pisaster ocharceus* in the rocky intertidal zone of southern British Columbia" has been published in the April 2010 issue, volume 3, no.2.

Laura's paper "A preliminary study of the effects of environmental enrichment on the behaviour of captive African wild dogs (*Lycaon pictus*)" has been accepted for the June 2010 issue.

The journal was launched in 2008 as a means for final year students to submit their final year project for publication as a scientific paper. Successful students have a citable piece of research to start them on their postgraduate career.

Network Rail

John Dover has joined a new Technical Working Group set up by Network Rail on Sustainable Linesides. The aim is to develop biological solutions to management issues along the 20,000 miles of Network Rail's tracks. Typical issues include improving trackside security to prevent fly-tipping and trespassing, problems with easily eroded rock surfaces and animal burrowing which leads to destabilised embankments and cuttings, and inappropriate vegetation which leads to destabilisation of trackside, problems with leaves on the lines, and signal siting issues.



Molecular Techniques

On **1st-2nd June 2009** a course called "[Molecular Techniques: A practical approach to PCR and Real Time PCR as Diagnostic Tools](http://www.staffs.ac.uk/study_here/courses/molecular-techniques-short-course-tcm4212624.jsp)" was run by Dr Harry Mountain, Denise Figgins, Gail Mountain, Mishele Barrigas from Biological Sciences and Drs Jane Haddlington and Helen Bottomley from the company Applied Biosystems, who also kindly loaned us some of the equipment. The course attracted 8 delegates from academic and medical organisations in the UK in addition to two MSc students, one from Kenya and one from Guatemala. The feedback from the group was excellent.

http://www.staffs.ac.uk/study_here/courses/molecular-techniques-short-course-tcm4212624.jsp



Prize-winning Biomedical Science Student

Biomedical Science student Hafsa Azam (pictured below) was recently awarded a prize by the Institute of Biomedical Science (IBMS) West Midlands & Birmingham Branch for the student who gained the most, on a personal basis, during her clinical experience.



Hafsa was nominated by Dr Pauline Gowland, the Award Leader for Biomedical Science, and Katie Berger, who was Hafsa's training officer at the University hospital of North Staffordshire. Hafsa received her prize at the Annual General Meeting of the regional branch.

She said "I'm ecstatic about receiving the award - it is a real honour to be awarded this IBMS regional branch prize. I am very grateful to my training officer and personal tutor for their encouragement and belief in me throughout the clinical experience, without which, I don't think this achievement would be possible".

Beneficent Beetles

A joint project between Biology at Staffordshire University and the Potteries Museum and Art Gallery has just started. This project is concerned with developing the collection of Coleoptera at the Potteries Museum & Art Gallery to provide knowledge, scholarship and research potentials with regard to beetles. The new partnership with Staffordshire University will enhance the collection's accessibility and future usage potential.

The designated natural history collections of Stoke-on-Trent Museums are housed at The Potteries Museum & Art Gallery. In total there are around 100,000 zoological, 15,000 botanical and 12,000 geological specimens. This museum service is the only one in the West Midlands hub to employ trained Natural History professionals.

Utilising the specimens in the collection held at Stoke-on-Trent Museums, this project will focus on recording the distribution of the predominant indicator beetle species and enable their data to be added to the national database to enhance the information readily available to analyse changes over time. Access, both physical and intellectual, will be enhanced by taxonomically sorting specimens into dedicated and new storage facilities.



The project is being managed by the Museum. Craig Slawson of the Staffordshire Ecological Record will publish species data in map form to a dedicated website and onwards to the National Biodiversity Network (NBN).

Researchers at Staffordshire University, including students undertaking the proposed new Masters courses in invertebrate studies, will have access to the collection and will benefit from their improved accessibility and cataloguing.

Right: Don Steward, Collections Officer (Natural History) at the Potteries Museum and Art Gallery with some of the beetles in the museum's collections

Cheshire Active Naturalists

Dr. Dave Skingsley is a founder of a new natural history group for this region - [Cheshire Active Naturalists](#) which was publicly launched in March 2010.

Cheshire Active Naturalists is a new society to cater for adults who wish to advance their skills in a variety of natural history-related taxon groups. It is run by a group of passionate naturalists who wish to use their skills to benefit other naturalists which in turn benefits wildlife and wildlife recording in the county.

Education Presentations

Dr. Kevin Reiling and **Dr. Pauline Gowland** gave a presentation on Personal Learning and Thinking Skills at the Professional Development Conference held at the University on 20 November. The conference was attended by staff from the university and from the local and regional schools and colleges.

The presentation considered what HE requires from learners in terms of PLTS and how schools and colleges are working to develop the skills in the curriculum and address the development of successful learners.

The talk was very well received and the speakers were invited to contribute to a similar type of conference for Staffordshire schools on 15th January at the Stafford campus.

Anne Turner is a member of the Institute of Biomedical Science (IBMS) Specialist Advisory Panel for Medical Microbiology. Their most recent discussion centred on training and provision through HE and the Modernising Scientific Careers (NHS) agenda.

HE Academy

Presentations from the HE Academy Reps Forum, on the 10th and 11th September at the University of Birmingham are now available from www.bioscience.heacademy.ac.uk/events/repforum09.aspx

Short Courses in Biological and Biomedical Sciences

The series of short courses in Biological and Biomedical Sciences is continuing to attract applicants both regionally and nationally. In February a 'new' course was offered - Laboratory Diagnosis of Blood Borne Viruses. This was facilitated by Carol Atherton from the Virology Department at Birmingham Heartlands Hospital and Delma Llewelyn from Coventry University. The day concentrated on the hepatitis viruses and HIV and covered the epidemiology, clinical features and diagnosis of these infections. Group discussions centred on case studies and the social implications of these diseases. In March the series continued with a course on Parasitic Infections of the Gastro-intestinal Tract which focused on the identification of helminths and gut protozoa.

There has been increased demand for these courses in 2009/10 with a reserve list set up for the one day course in 'Understanding Antibiotic Resistance and Susceptibility Testing' at the end of March and only a couple of places remaining for the 2 day Clinical Mycology course in May. These courses have attracted applicants from local and national hospitals and pathology laboratories along with those from industrial companies, private laboratories and veterinary laboratory agencies and research centres. The courses are CPD accredited by the Institute of Biomedical Sciences (IBMS) and receive excellent feedback including "It has given me ideas of ways we can improve our current practice" and "clear emphasis on the importance and relevance [of theory] to laboratory work".

The courses delivered to date have concentrated on microbiology and molecular biology. However due to the excellent feedback received from applicants and training officers we have been asked if we can expand our provision into areas such as clinical chemistry and haematology.

Other Courses offered were:

- **Practical techniques in molecular biology 'from genome to gene'**
18-22 January, 2010, Cost £820 (£730 IBMS members)
- **Laboratory Diagnosis of Blood Borne Viruses**
3 February, 2010, Cost £95 (£85 IBMS members)
- **Parasitic infections of the gastro-intestinal tract**
11 March, 2010 and 16 June, 2010, 9.30am – 4.30pm, Cost £95 per day (£85 IBMS members)
- **Identification of anaerobes**
5 May, 2010, 9.30am – 4.30pm, Cost £95 per day (£85 IBMS members)
- **Clinical mycology: Identification of fungal pathogens**
25 and 26 May 2010. 10.00am - 4.00pm Cost £95 per day (£85 IBMS members)

Feedback from previous lectures has been very positive. Specific comments included "lectures were excellent – very informative", "practical work included useful advice for identification techniques", "re-enforced understanding and confidence in parasitic cyst identification", "provided a much better understanding of ESBLs and diagnostic techniques available", "you can learn more in one afternoon on this course than you can in a year in the lab!!"

We plan to offer the courses again and to develop courses in other topics such as blood-borne viruses and anaerobic bacteria. Please contact Sara Buckley (email s.l.buckley@staffs.ac.uk) for more information.

Research Students

Two new PhD students have started their studies with Professor **John Dover**, thanks to funding offered by the University's Institute for Environment, Sustainability and Regeneration.

Caroline Chiquet is studying the biodiversity and wider environmental value of green walls, supervised by Prof. Dover and Dr. Paul Mitchell.

The environmental benefits of green walls potentially include visual amenity, human health (filtering of particulates, gasses/aerosols), food production (vertical gardens), biodiversity (wildlife habitat/resources), reduction of light and noise pollution, climate amelioration (temperature, relative humidity, promotion of air circulation), reducing storm-water flows (interception of rain) and acting as building insulation and shade.

Helen Grout is researching the effects of the plant disease *Phytophthora pseudosyringae* on bilberry (*Vaccinium myrtillus*), supervised by Prof. Dover and Dr. Pete Gowland. Her studies are funded jointly by IESR and by Staffordshire County Council. Bilberry on Cannock Chase is being killed by the *Phytophthora* and the County Council are funding the research in an attempt to control the disease.



Steve Potter from Staffordshire County Council shows Helen how to check for the presence of *Phytophthora* using a laminar flow device.

Both students started their studies in April and are fully-funded for 3 years. Further grants from IESR are now being advertised in the fields of regeneration and sustainability. See http://www.staffs.ac.uk/schools/sciences/geography/links/IESR/phd_studentships.shtml for further details.

New MSc courses

From September 2010 Biological Sciences at Staffordshire University is offering 3 new MSc courses. The present course in Habitat Creation and Management will be replaced by a new course called [Habitat Management and Conservation](#). There will also be specialist courses in [Invertebrate Ecology and Conservation](#) and [Urban Ecology and Conservation](#).



Hay meadow in Spain



High nature value farmland



Green wall in a city



Invertebrates



The present distance learning course in [Molecular Biology](#) is also still available.

Open Days

Prospective students are encouraged to visit us at an Open Day. University Open Day 2010 dates are listed below. For further details see http://www.staffs.ac.uk/visitors/open_days/

OPEN DAYS 2010:

- WEDNESDAY 30th JUNE
- SATURDAY 21st AUGUST
- THURSDAY 26th AUGUST
- SATURDAY 25th SEPTEMBER
- SUNDAY 17th OCTOBER
- SATURDAY 13th NOVEMBER