Environmental Science and Environmental Biology@Nottingham

The University of Nottingham

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School of Biosciences Newsletter 2016

Invaluable skills and great career prospects!

Student Alice soil sampling on the arctic ecology field course.

Meet our students
University life in the words of some of our current students

Supporting your studies
Helping you to achieve your potential

Earn while you learn
Industry placements that pay you to develop your skills and boost your employability

Welcome to the School of Biosciences

"I realise that applying to university is a daunting and perhaps confusing challenge, with so many choices available between different courses and places of study. So I am delighted that you are considering the School of Biosciences at The University of Nottingham.

Professor Crout presenting a graduate prize.

In addition to being an international centre of excellence for biosciences, our school also has a unique and friendly ethos enabling us to provide you with first-class education in all the latest aspects of biosciences. This combination of scientific excellence and supportive learning environment is one reason why our past students, and their employers, consistently rate us as a top provider.

Our environmental science and environmental biology students are based at University Park Campus. They are taught by world-class specialists, many of whom are expert advisers to national and international bodies. We are very proud of the high position we achieve in the various league tables which rank our work, not least the High Flyers Research which places Nottingham amongst the best performing universities for top graduate employers. We have extensive links with companies and institutions working in the field of biosciences around the world, helping ensure our courses are relevant to industry and that our students acquire the professional skills they will need after graduation.

If you haven't already, we hope that you will visit us and see for yourself the opportunities we provide. We wish you well in any exams you may be taking over the coming months and hope to welcome you here in the autumn."

Professor Neil Crout
Head of the School of Biosciences

Meet our students

Grace Smith / MSci Environmental Science (first year)

"I chose Environmental Science because it is such a wide degree including business, geography, chemistry, anthropology, biology and more. There are plenty of ways to style your degree and, even as a first year, I already know which way I want to take my degree and have picked my optional modules based on my strengths.

Nottingham was always pretty high up on my list of universities but the things that made it stand out were the great breadth of material and the relationships with academic staff. Whenever I need any help there is always someone to talk to.

I live on Broadgate Park which is self-catered accommodation just off campus. I love being in self-catered as it is far more independent and you are not fixed to having meals at certain times. My flatmates were the first friends I made at University and are still some of my best friends as we got thrown together when all of us didn't know anyone else.

I am a member of the University's Equestrian Society and Silver Screen Society. The Equestrian Society is a great bunch of people all joined together because of our love of horse riding, but we do such a wide range of things together. Silver Screen is a film society where we get together every week to watch a new film. I am also setting up an Environmental Science and Biology Society for everyone studying our course to get to know one another, socialise, get involved with talks and conferences to do with the subject, and much more."

Tim Stratton / BSc Environmental Biology (first year)

"I was keen to do a biology degree that linked the subject to current world issues such as conservation, human ecology and climate change. The environmental biology course at Nottingham does exactly that, with a great variety of humanitarian, biological and environmental modules. The majority of modules in my first term included regular practical and group work, helping me to consolidate my learning in a fun and sociable environment. The University's George Green Library is a fantastically well-equipped place to work, with all the books you could ever need along with computer and printing facilities.

Everyone in the School of Biosciences is extremely helpful and friendly, with lecturers being more than happy to provide assistance. In the first week here we were taken on a field trip to Dovedale, in the Peak District, allowing me to "break the ice" and get to know all the people on my course. I am lucky enough to be spending the second year of my course at Nottingham's Malaysia Campus, opening up a wide variety of study and field trip opportunities as well as discovering a whole range of new cultures - I plan to do some travelling in the holidays.

Outside of work there are hundreds of different societies and sports to get involved in, with the University rating highly for sports in the UK. I am in the Ultimate Frisbee squad and am a member of the University's Swing Dancing Society. These both provide a great way to make new friends outside my course.

Nottingham as a city offers a huge amount, with lots of shops and restaurants. Trent Bridge and the Motorpoint Arena host plenty of professional sports fixtures, including regular ice hockey and basketball matches. Rock City is one of the UK's top venues for live music, with The Kooks, Rudimental and The Libertines having all performed there recently.

My time at Nottingham so far has been great and has provided me with knowledge, experiences and so many amazing opportunities."

Freya Rose / MSci Environmental Science (second year)

"I chose to study Environmental Science because it's an interdisciplinary subject encompassing aspects of chemistry, biology, geography, geology and more, so there's a lot of variety. It's also interesting because it's an applied science – you're learning about issues that are actually happening right now in the world around us, like climate change and conservation of endangered species. At Nottingham, you can also choose optional modules, allowing you to tailor your degree to your interests. I really like that there's a great sense of community on the course and everybody knows one another.

Field trips are a big part of the course and a great opportunity to get to know other students and the academic staff. The trip to the Peak District in the first week was a big highlight for me. There are a lot of amazing opportunities for students - I have applied to study abroad for a semester next year, and I'm also hoping to undertake some industrial experience later in my degree – both will give me a big boost in starting my career. The University has strong links with many companies and schemes, and offers many ways to enhance your degree, so is definitely the right choice in investing in your future.

University Park Campus is a brilliant place to live in first year. It's green, spacious and safe and the city centre is just a short bus ride away. The new David Ross Sports Village is currently under construction, but if sports aren't your thing there's still a huge variety of activities and societies to get involved with. I've been on one of the Snow Sports Society trips to Val Thorens - it was an absolutely amazing week which will be one of my favourite memories from university in the future. Nottingham is a great student city with a vibrant nightlife; there's everything you could possibly need but the city doesn't feel too big. I currently have a part time job as a waitress to support my studies, and there are a lot of similar positions available to students if that's something you're interested in doing."

Emily Tyack / BSc Environmental Biology (second year)

"The first time I came Nottingham was on an open day. I had been to what felt like hundreds of open days but none of them quite stood up to Nottingham. Every university calls my subject something different, and the content can also vary from uni to uni - I came to University thinking I liked marine science and animals, yet within a few months the lecturers here had converted me into a lover of plants and soil science. The breadth of modules and enthusiastic lecturers opened my eyes to subjects I would otherwise have dismissed, and I'm really grateful for that because it makes me a more rounded scientist.

Environmental biologists are pretty blessed with their opportunities to travel as well; after my first year I went to Honduras as a research scientist with Operation Wallacea, and in my final year there is an arctic ecology field course to northern Sweden which I am very much looking forward to!

I really want to get as much out of uni as possible; there is so much on offer here that it's just so easy to get involved! I joined the lacrosse team, took up kayaking, am on the committee of the Conservation Society, was a student ambassador for my course, and volunteer in the paediatric ward of the QMC, holding craft sessions as part of Open Art Surgery. I have met some of my best friends through these activities.

Heart-wrenchingly, I am leaving them all next year for a year in industry, working as an ecological research scientist in Paignton Zoo. If applying for placements taught me anything it's that employers are looking at more than just grades, so not only am I having the time of my life doing all this extra stuff at uni, I'm also effectively expanding my CV with everything employers want to see. University is definitely what you make it - Nottingham has everything you could possibly want, you just have to come here and find it!"

Opportunities for placements

Many students take an optional year-long industry placement between years two and three. This enables students to develop their skills and enhance their employment prospects, while being paid a salary as an employee for the work they undertake.

Home or away? It's your choice

Rachel Jessop has recently joined the School Placement Team which manages undergraduate placements in industry for students in the School of Biosciences.

"So many companies are looking for graduates with previous work experience, and having a year in industry will really make you stand out when you start applying for graduate jobs.

The year (taken between years two and three of your degree) is an opportunity for you to find out what you enjoy doing, what you're good at and the kind of environment you like working in. Students find the experience transformative as they have the opportunity to use science and innovation to solve problems which are current and relevant. You are treated by your host company just the same as any other employee, being given real responsibility and the opportunity to work independently in a professional setting. You will quickly gain experience of how to communicate with people from a range of backgrounds, work to tight deadlines, manage multiple projects and deal with conflicting deadlines.

A year in industry abroad is definitely on offer. As well as all of the benefits of undertaking a placement in the UK, students who choose to do an international placement will gain additional skills which are highly valued by employers, including cross-cultural communication, cultural awareness, the option of learning the basics of another language or improving your current language skills, and a high level of independence.

In recent years, our students have completed work placements at the Game and Wildlife Conservation Trust, ADAS, Delta-Simons, Mott Macdonald, Pepsico and Gatwick Airport.

It's up to you how far you want to go – in every sense."

Rachel Jessop, School Placement Team.

Third year MSci Environmental Science student James Dinsley is on a year's placement at PepsiCo.

"I am working as an Environmental Sustainability Technician in PepsiCo's European R&D centre, based in Leicester. In my role here, I determine the potential carbon footprint impact of new innovations within the Quaker Oats product portfolio, prior to their launch into the western European food market. This requires me to assess product performance on a number of environmental metrics including its carbon emissions across the full product life cycle, such as ingredients, logistics, manufacturing, consumer use and packaging.

My degree course allows me to further my understanding of the natural world and discover the challenges associated with environmental management across multiple industries. In my view, environmental sustainability is critical for securing long-term corporate development and for protecting our environment and so I hope to find a career that would allow me to promote sustainable behaviours to global corporations after I graduate.

When I heard about the option to complete a year's placement through my degree, I was sold! I had limited work experience prior to university, especially in the environmental sector, so this placement was a fantastic opportunity for professional development, to gain contacts within the industry and also find out whether a career in environmental sustainability was right for me. Naïvely, it had never crossed my mind that a food corporation such as PepsiCo would be interested in hiring an environmental science student or that they would even conduct carbon footprinting work. From this it has really hit home for me how diverse the job opportunities for an environmental scientist can be!

During my first months at PepsiCo, I have advanced my knowledge of environmental sustainability greatly, with opportunities to learn even more about sustainable agriculture, packaging sustainability and the R&D product development process. It was difficult to adjust to the work environment at first and I had to absorb a lot of information at a very quick pace, so for someone with limited work experience, it was certainly a big change from university! However, I feel that I have learnt a great deal from my placement already and I've had some amazing experiences."

James Dinsley at PepsiCo.

Third year BSc Environmental Biology student Belinda Bown is currently on a year's placement at the Game and Wildlife Conservation Trust.

"For me, going on a year's placement has been worth the CV writing, speculative calling and gruelling interviews (although even in these skills I have grown in confidence!). When I applied to university I knew I wanted to do a placement and I have not regretted my decision.

I am working for the Farmland Ecology Unit at the Game and Wildlife Conservation Trust (GWCT). The GWCT is an applied research charity which works in the field to find realistic management solutions to current wildlife issues. They create innovative experimenting techniques, have a great relationship with the countryside community and a wealth of experience.

The Farmland Ecology Unit researches the impact of a farmed landscape on insect pollinators and predators of crop pests. A typical week can see me identifying insect samples, researching pesticides, entering data and doing field work. I have also been fortunate enough to join other departments' projects including helping to electro-fish and tag salmon in a chalk river and measuring and releasing woodcock in the middle of the night. Not only have these increased my practical field scientist skills, they have also allowed me to experience nature up-close and personal!

My course prepared me for my placement by giving me a broad knowledge. The flexibility of module choice has allowed me to shape my degree towards the kind of placement I wanted to do (biogeography, agriculture and ecology) whilst the core subjects gave me an understanding of key environmental processes and scientific methods that are vital to my placement. By being within a work environment I have also developed skills that all employers look for including managing a large, varied workload and using my own judgement to solve problems. Furthermore, through networking with a range of professionals, new opportunities and experiences have opened up for me as well as a view of different careers in the environment sector.

Overall, my placement has helped me grow more confident about my job prospects, whilst also allowing me to enjoy a year of real-life opportunities that I wouldn't have had otherwise."

Belinda equipped for fishing on the River Frome.

Studying abroad

Our students have many different opportunities to study abroad. You can combine your studies with the Certificate in European Studies to give you an extra year at one of our partner institutions in Europe, or you can apply to study abroad for one semester via the popular University-wide exchange programme. Our environmental biology and environmental science students may have the opportunity to apply for a semester or year at the University's Malaysia Campus. Our new international degree in environmental science include a year in Sydney, Australia.

Peter Mullard (BSc Environmental Science, second year) has spent a semester in Malaysia.

"What an amazing six months! Malaysia has friendly people, flavoursome food and fantastic biodiversity! From the moment I walked in to the University's Malaysia Campus I felt welcome. In my intake there were students from many countries, creating a great learning environment both academically and socially. I learnt so much about not only the Malay culture, but also Sri Lankan, Chinese and Indian to name just a few! From this I really feel humbled by how well these different cultures fuse, while enjoying some of the tasty food that has been cooked up in this hot pot of culture.

The rainforest in Malaysia is probably the oldest in the world at 130 million years old! The amount of life that has evolved is amazing; it's also accessible, with several trekking spots being about an hour from campus. Access to the 70m trees in the centre of the peninsular is a bus ride away, and orang-utangs, elephants and rhinos can be seen by taking the short flight to Malaysian Borneo.

Tropical ecosystems became so much more real as I studied them; the lecturers have a real depth of knowledge and a passion for conservation which comes through in the more intimate lecture environment with small class sizes. Many of the Malaysian modules include a field trip, which was a great way to gain knowledge about this unique environment. I highly recommend taking the tropical field course while you're out there! My module credits from this semester count towards my final degree. This gives me time to do a year's placement next year to fully participate in what this degree has to offer!

Life outside the UK is something which really has to be experienced first-hand. There are so many sites to see, cultures to learn from and ecosystems to protect. In Europe environmental conservation is relatively well established, whereas in Malaysia and the surrounding countries conservation is still finding its feet. This effort may be too late for species such as the Sumatran Rhino, but I have hope that efforts will be increased in coming years and many species can be protected."

Peter in the Malaysian rainforest.

Field courses

Fieldwork provides hands-on experience directly related to skills required in the environmental sector. Our courses offer field study opportunities in Devon, Malaysia, Czech Republic and Sweden.

Lee Anderson (BSc Environmental Science with a Certificate in European Studies, fourth year) writes:

"An area of great pride when discussing my degree is talking about my experiences on the field trips that are offered. These have given me topics to bring up in job interviews and applications to highlight my experiences of practical data collection and efficient teamwork, and now sit proudly on my CV. They add a huge amount of value to the degree and offer the personal satisfaction of being able to read through a self-written report about current environmental issues. Not to mention the fun that was had with friends whilst travelling to these extraordinary places.

My summer between second and third year began with a trip to northern Sweden and the Arctic Circle to understand the impacts of climate change on such sensitive ecosystems. It's an area of the world that I may never have been able to visit otherwise and the scientific methods and skills acquired have proven invaluable for my final year project work.

The same summer ended with a trip to the northern region of the Czech Republic and the Black Triangle, allegedly Europe's most polluted region as a result of intensive industry and coal based energy production. This trip involved travelling through some of the largest mines in the world in giant vehicles and speaking to local environmental scientists and engineers to see how the region is improving through reclamation strategies. The scientific principles behind my report for this trip largely differed to those applied in Sweden, but both trips have taught me new methods and given me laboratory experience and report writing guidance.

Like most field trips, the hard work is often followed by social events. Swimming in an arctic lake and seeing reindeer roaming the Swedish forests will remain in my memory along with the mountain ranges of Bohemia and the bustling city streets of Prague. I cannot recommend these field trips highly enough to improve an already hugely satisfying degree."

Students on the arctic field course with Dr Sofie Sjögersten (far right).

Supporting your studies

Student Experience and Support Officer

The University of Nottingham recognises the central importance of supporting our students' welfare in order to maximise their academic potential.

The School of Biosciences has a Student Experience and Support Officer whose role complements and supports our Personal Tutor system and the other established student support structures of the University. In essence, the role bridges the gap between central support services and the school, so that our diverse student population can gain the most from their time at the University.

Liza Aspell (Student Experience and Support Officer for the School of Biosciences) is available to meet students at our open days for advice and says: "I have a great job, I love meeting such a diverse range of students and helping them achieve their potential. I think it's good to meet students face to face, for them to know who I am and where I am so that whenever they need some advice or help during their studies, they already know who to talk to."

Liza provides signposting to University support services (including academic support and counselling), a central contact point for disability issues and extenuating circumstances and a confidential listening ear for student worries.

Liza (right) with a student.

Student research projects

Whether you choose environmental science or environmental biology, your final year research project will be a major component of your degree. Projects can be experimental or literature based and give you the opportunity to work closely with academic staff. Projects are frequently related to current research being carried out in the School of Biosciences.

Thomas Newman (MSc Environmental Science, fourth Year) undertook his research on Peatland Restoration.

"For my final year project I am looking at how future increases in atmospheric carbon dioxide and variable water levels effect Sphagnum moss growth, in the hope of improving current and future restoration of the UK's peatlands. This is because 99% are degraded due to land use change and peat mining, which causes peatlands to emit large amounts of CO_2. By restoring them with Sphagnum moss, they return to a carbon sink. The objective is to identify the best species of moss to use when restoring the peatland. "

Initially, peat was collected from Cadishead Moss, a peatland near Manchester that is looked after by the Lancashire Wildlife Trust.

"My day collecting peat was great, I got to experience first-hand how restoration of peatlands was currently being undertaken, and meet members of the Lancashire wildlife trust. It really put my research into perspective of how important it would be to helping improve current restoration attempts.

Once we had transported the peat back to Nottingham, it was divided into clear plastic pots. Three species of Sphagnum moss (S.fallax, S.capillifolium and S.papillosum) were applied to the cores which were then placed in the state of the art atmospherically controlled growth rooms at Sutton Bonington Campus. Different atmospheric CO_2 treatments were used, with three different water levels applied using rainwater to simulate conditions on the peatland. The Sphagnum moss was supplied by MicroPropagation Services (EM) Ltd, who also part funded my project and helped supply rainwater.

Being able to work with the only company who are currently helping to restore peatlands in the UK really helped me develop my ideas and refine my project into something that would best benefit restoration efforts. It was great to be organising my own project meetings with people outside the university, something that I had never done before, and get a taste for what it's like to conduct real research.

It is really satisfying to go into the growth rooms each day and see my moss growing at different rates depending on species and treatment. While the moss was growing, I recorded the height as well as how healthy the plants were and the gas emissions, to give an idea of how fast the moss would grow and the best species for reducing carbon dioxide emissions."

"I have really enjoyed the opportunity to take part in cutting edge research first-hand, and work collaboratively with multiple organisations. It's great to see how my research will help future restoration work. This year has been one that I will never forget. It's great that Nottingham has the facilities to allow me to conduct my own research on such an important issue!"

Thomas working in the growth room.

Carbon capture conference

In July 2015 leading experts from around the world attended the 6th International Environment Forum on Carbon Capture and Storage (CCS) held in Seoul, South Korea. Dr Barry Lomax, Lecturer in Environmental Sciences at Nottingham was invited to speak, along with colleagues from the British Geological Survey, The University of Sheffield, and researchers from Canada, Australia and the USA.

The aim of the forum, organised by the Korea CO_2 Storage Environmental Management (K-COSEM) centre, was to share best practise and to examine the environmental impact of CCS.

Along with a series of talks the forum included a visit to the newly commissioned K-COSEM experimental field site at Eumseong, south of Seoul. At this site they are developing two separate facilities, one of which is looking at potential environmental impacts of leakage on plants and microbes and near surface monitoring of CO_2. Dr Lomax was able to help staff with the design of their field experiments for looking at plant CO_2 interactions.

Dr Lomax gave presentations on his work looking at plant responses to very high levels of CO_2 in the soil. This work, which is funded by the National Grid, was a mixture of field and laboratory studies and included some data gathered by Nottingham's final year project students. The work shows that although high soil CO_2 can cause plant stress, the effects are highly localised and recovery occurs once the CO_2 supply is stopped. These results form an important first step in helping to demonstrate the safety of carbon capture and storage technology which could be an important tool in helping mitigate climate change.

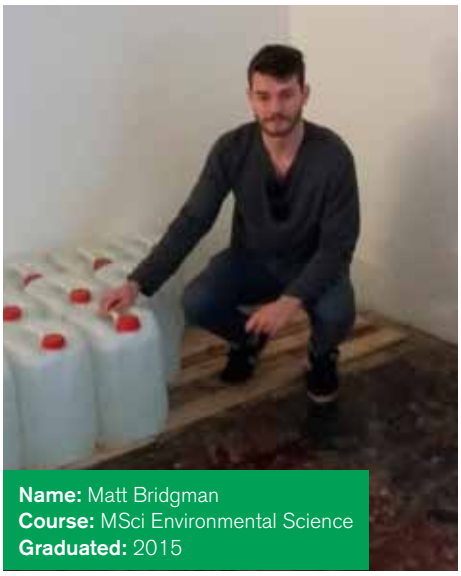
Graduate profiles

Matt is now employed in environmental services in Dubai.

"Five months after graduating in 2015 I was offered a job as Production/Research and Development Manager at a small environmental services company in Dubai. My role is to look after the formulation and production of an established bacterial-based commercial drain cleaner, as well as conducting research and development on a variety of new microbial-based (all organic) agricultural products including pesticides and plant nutrition aids, with the aim of introducing them into the UAE market and eventually markets in Asia and Europe.

As it's a new company I've found myself at the heart of operations which has been great. In my first week I have worked as part of the team in charge of the development and implementation of structures for our bid for the environmental ISO 14001 certification as well as taking a lead in the construction of the new website. From our office in Dubai Mall (next to the Burj Khalifa) and the warehouse where production is based, I'm gaining great exposure to the management and operational aspects of running a small business.

I can genuinely say that the research-focused nature of my degree, particularly in my fourth year, has prepared me well for this role. I've learned to solve problems, work around technical concepts and communicate in a scientific and professional manner, all of which I hope will stand me in good stead for whatever the future may bring. It was partly because of this, together with a semester studying abroad in New Zealand, the experience of writing my fourth year dissertation for publication and my summer placements in business and scientific research environments that I landed this job. I'm extremely grateful for the personal and professional opportunities that I got out of my four years at Nottingham."



Name: Matt Bridgman
Course: MSci Environmental Science
Graduated: 2015

Saoirse is now a Lecturer in Applied Plant Biology at University College Dublin, Ireland.

"I completed my BSc in Environmental Science at The University of Nottingham in 2008. It was during a summer research placement with Dr Helen West that I realised I wanted to continue on the academic career path, as I was inspired by the passion and knowledge of the staff at the University. Also, it turns out that scientific research is actually really fun! I loved working in the labs and outdoors on field trips. Professor Sacha Mooney (Director of the Hounsfield Facility for Rhizosphere Research) guided me from the start as my undergraduate course tutor and I then went on to complete a PhD and post-doctoral research project in the same department.

My research involves understanding how plant roots respond to the soil environment. When I studied and worked at the Hounsfield Facility I learnt how to use X-ray computed tomography to visualise roots and soil structure. It was very exciting working at such a specialised facility with state-of-the-art equipment, software and robotics to study plants!

Pictured left to right: Prof J McElwain (UCD), Damien English (TD Minister for Skills, Research and Innovation), Dr Saoirse Tracy (UCD), Prof Mark Ferguson (Director, Science Foundation Ireland) at the grant award ceremony.

I started my new role as a lecturer at University College Dublin in September 2015. I now teach agriculture, horticulture, forestry and environmental science students about plant biology and soil science. As well as teaching, research is central to my role. I was recently successful in securing a grant for 1.3 million euros in collaboration with Professor J McElwain (Plant Palaeobiologist at UCD) for an integrated plant phenomics and future experimental climate platform. We will use the facility to investigate the effect climate change will have on crop plants above and below ground.

I thoroughly enjoyed my time at The University of Nottingham and all the amazing opportunities it gave me!"

For further information please contact the Biosciences Admissions Team:

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