

January 2018

FORESTRY@BANGOR

Bangor University's Forestry Alumni Magazine

- **High Achieving Alumni**
- **The Henman Award**
- **Overseas Adventures**
- **Research Highlights**



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Why this newsletter?

It was in the summer of 2014 that we celebrated 110 years of forestry teaching at Bangor University – at an event attended by many alumni, and former and current staff. There was a consensus amongst those present that they would like to see a regular newsletter produced about forestry@bangor activities. More than three years later, here it is! Its purpose is two-fold: firstly, to enable alumni to be kept up to date and informed about changes, developments and activities, and secondly, to allow other interested parties the opportunity to learn more about forestry@bangor.



Staff, students and alumni gathered at Llyn Elsi, July 2014, as part of the 110th anniversary celebrations © Mike Hale

What does 'forestry@bangor' mean?

forestry@bangor is a term coined by [Dr Mark Rayment](#), Lecturer in Forestry, to encapsulate the wide range of activities taking place in Bangor University relating to forestry. Forestry was lost from the School name in 2007, when the former School of Agricultural and Forest Sciences became the School of Environment and Natural Resources, and use of the term forestry@bangor is a way of retaining the important sense of 'forestry identity' that staff, students, alumni and other stakeholders value.

forestry@bangor alumni – recent events

Details of the event held in Bangor in 2014 to celebrate our 110th year of teaching forestry can be found via the forestry.bangor.ac.uk website. As well as the successful event, which was attended by some 70 alumni, former and current staff, there are also some great stories from various alumni in the '[memories](#)' area of the website, and a [timeline of forestry@bangor](#) from 1904 to the present can also be found.

A number of international events featuring our forestry alumni have also been held recently, including [Accra, Ghana \(July 2017\)](#), [Kenya \(November 2016\)](#) and [Uganda \(August 2015\)](#).

These represent just a few of the official forestry@bangor alumni events that have been held recently – we know for sure that our alumni hold regular informal (and perhaps formal) gatherings that those of us based in Bangor do not know about (nor do we need to!).

forestry@bangor alumni - achievements

The tremendous achievements of so many of our alumni continue to astound us. forestry@bangor alumni play major roles in all aspects of forestry across the world, including the management of huge areas of public and private forests, as well as the development of forest policy, regulation, community engagement, conservation, protection, processing, value-adding, research, development and education. To summarise the achievements of all our alumni is unrealistic, so instead, here we summarise just a few of the recent achievements and contributions that we are aware of.

Two forestry@bangor alumni, Graham Taylor (BSc Forestry and Soil Science 1990), and Geraint Richards (BSc Forestry 1992), were recognised for their outstanding contributions to forestry in the [2017 Queen's Birthday Honours](#). Graham was awarded an MBE for service to forestry, whilst Geraint was awarded the MVO (Member of The Royal Victorian Order). Graham and Geraint have also maintained close links with their alma mater during this time, including hosting regular forest visits, giving [biannual guest lectures in Bangor](#), and, most importantly, inspiring numerous forestry@bangor students.

Alec Dauncey (BSc Forestry, 1981) returned to Bangor after a varied career in the Forestry Commission, Welsh Government and Whitehall to study for a PhD, which he completed in 2016: [Forestry policy : hindsight, forethought and foresight](#). He is now working as a part-time Teaching Associate in the School, providing forestry@bangor students with hugely enriching insights from his career and research. He has a desk in G6, Thoday, previously occupied by his personal tutor Tom Owen and his PhD supervisor Professor Colin Price – memories that provide much inspiration.

forestry@bangor alumni – supporting students through the Bangor Fund

We are incredibly grateful to all our alumni who have donated funds to [The Bangor Fund](#), which has enabled us to support several forestry@bangor students with overseas trips relating to their studies.

Jo Arponen was supported with a grant of £800 which enabled her to travel to Uganda to collect data for her MSc Forestry (distance learning) dissertation, part of a much larger project focussing on child nutrition and urban plant diversity.

Evans Kyei-Obeng was supported with a grant of £800 which enabled him to travel to the Sasumua watershed, central Kenya. The dissertation helped to further our understanding of how land degradation indicators such as land use, vegetation cover (woody and herbaceous), and soil erosion have changed in the last ten years in the Sasumua watershed, which supplies 20% of fresh water used in Nairobi, the capital city of Kenya. Evans used the Land Degradation Surveillance Framework (LDSF) to collect



biophysical data and also conducted interviews with farmers, to try to understand land degradation not only from a purely scientific perspective, but also through the eyes of local people, by learning what they know and have seen about land degradation on their lands.

Charles Mwafute was supported with a grant of £800 which enabled him to conduct his dissertation field work in the Amani Nature Reserve, Tanzania, where he evaluated the above ground carbon stores across an altitudinal gradient. He found that, in this nature reserve at least, that lower altitudes have lower stores of above ground carbon than high elevations, most likely as a result of lower rates of degradation in areas where access is difficult.

Dickson Mauki was supported with a grant of £800 which helped him to spend three months in Kenya, conducting research in partnership with the World Agroforestry Centre (ICRAF). His research focused on the status of trees planted under different management options designed to maximize their survival under harsh dryland condition like poor soil fertility, moisture stress, soil erosion and other related problems.

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| <p style="text-align: center;">UGANDA</p>  <p>Jo with two residents of Kampala, collating valuable data about their forest gardens © Jo Arponen</p> | <p style="text-align: center;">KENYA</p>  <p>Evans collecting soil samples in the Sasumua watershed, central Kenya © Evans Kyei-Obeng</p> |
| <p style="text-align: center;">TANZANIA</p>  <p>Taking tree diameter, distance from the tree, height and elevation measurements within the plot © Charles Mwafute</p> | <p style="text-align: center;">KENYA</p>  <p>Fruit trees (<i>Carica papaya</i>) planted in the trenches, as part of soil and water conservation measures © Dickson Mauki.</p> |

forestry@bangor alumni - The Henman Award

This generous bequest is having a really positive impact upon the learning and opportunities of current students.

The Henman Award

Travel grants for forestry-related projects in a country other than the UK

Warren and Beth Henman had a long and close association with Bangor University. Warren studied Forestry, graduating in 1955. Beth first came to Bangor to take up a research post in the Botany Department and later lectured in Botany and Forestry.

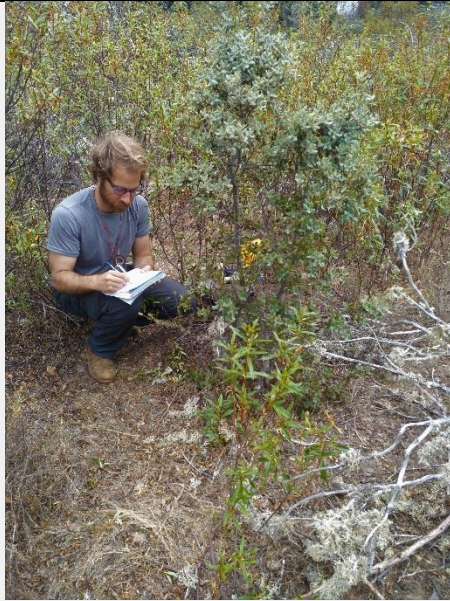
The Henmans have made a generous bequest to Bangor University to support students undertaking forestry related research projects. SENRGy (forestry@bangor) uses these awards to support students working on forestry related projects in a country other than the United Kingdom.

To date, using the Henman Award, we have been able to support five students with overseas research. These include Uganda, Spain, Costa Rica and the Philippines.

Jorge Lafora was able to undertake extensive field work to further understand the regeneration capacity of holm and cork oaks in the fenced Mediterranean forest in the South-West Spain.

Dominic Wodehouse used his Henman Award to travel to the 2nd ASEAN Mangrove Conference in Manila in September 2017. Dominic was able to share insights from his extensive PhD research with central government officials and the agencies responsible for the management and protection of mangroves across the country.

Through a Henman Award, Genevieve Agaba (PhD student and forestry@bangor staff member) was able to conduct vital field work for her PhD, which is evaluating the roles of trees in rural smallholder livelihoods in East Africa (specifically Kenya and Uganda). She was working in close collaboration with researchers in the National Forestry Resources Research Institute (Uganda) and the World Agroforestry Centre, as well as other local institutions that helped facilitate her fieldwork. Semi-structured interviews and focus group discussions were held with smallholder farmers about frequency of tree product use from different sources and plans for future tree planting.



Jorge Lafora measuring regeneration of holm and cork oak. Summer 2017. © Jorge Lafora



Jorge Lafora was also able to use his generous Henman Award to attend the annual national conference of professional foresters in Spain, enabling him to develop his networks and discuss his research with other researchers. Summer 2017 © Jorge Lafora



An interviewed farmer feeding his cow tree fodder, leaves and fruit from mango and avocado. May 2017. © Genevieve Agaba



Dominic Wodehouse (right) at the 2nd ASEAN Mangrove Congress, September 2017 © Dominic Wodehouse

If you would like to find out more about how you could make such a bequest, either through a named award or an anonymous donation, please visit our 'Giving to the University' website, where you will find lots of information, advice and contact details.

<https://www.bangor.ac.uk/giving/index.php.en>

forestry@bangor alumni – recent contributions to field trips, student placements, other activities

We regularly call upon our alumni when it comes to hosting site visits. We are incredibly grateful for the time and effort our alumni devote to these activities. For many of our students, these visits are some of the most valuable aspects of their studies, enabling them to see the practical applications of their learning and, perhaps equally importantly, providing them with tangible insights into what they might achieve one day with their own careers. Some examples are listed below. All images © James Walmsley.

Sam Brown (BSc Forestry 2011). Tilhill Forestry, Palé Hall, Bala, North Wales. Sam recently hosted final year forestry students, sharing with them some personal insights into the activities, responsibilities and challenges for a forestry professional, then hosted site visits to two private forests that he manages, near Bala, North Wales.



Stephen Ramage (BSc Forestry 2007). Gresham House Forestry.
Neil McGovern (BSc Forestry 2005). Euroforest.

Steve and Neil regularly host visits to forests in Eskdalemuir, Scotland, Gwydyr Forest, Snowdonia and Llandegla Forest, near Ruthin, to introduce students to the many complexities and logistical challenges of planning and undertaking forest operations.



Luke Angelaare (PhD Agroforestry 2005). Forestry Research Institute of Ghana. Luke hosted a visit to a cocoa agroforestry shade experiment in Ashanti region, Ghana, as part of the Tropical Forestry Study Tour in summer 2017.



Rob McKenna (BSc Forestry and Forest Products, 1999). James Jones and Sons sawmill, Lockerbie.

Rob hosted a fascinating visit to this huge operation, providing valuable insights into how silviculture, species selection and markets influence sawmilling, as part of the UK Forestry Study Tour in April 2017.



Dafydd Cadwaladr (BSc Agroforestry, 1992), Dafydd Cadwaladr Firewood and Tree services, Bethesda, North Wales. Dafydd hosts an annual site visit to his firewood business every year for our first year students, providing them with unique insights into a firewood and forestry contracting business, as well as generous quantities of tea and bara brith. Diolch yn fawr iawn, Dafydd!



Antony Griffiths (BSc Forestry 1996) and Peter Lloyd (BSc Environmental Conservation, 2008) regularly host visits to Natural Resource Wales managed forests, discussing forest plans, supervision of forest operations.



Imam Sayyed (MSc Environmental Forestry 2008) and Richard Parsons (MSc Environmental Forestry, 2002) regularly host visits to [Maelor Forest Nurseries](#), north east Wales. These introduce students to the principles of tree breeding and improvement. They also enable students to learn about the very latest forest nursery techniques and about the complexities of seedling supply, quality control and customer relations.



University recognition for forestry@bangor alumnus

Professor Julian Evans OBE, a Bangor forestry graduate was awarded an Honorary Fellowship by Bangor University for his services to Forestry in the 2017 summer degree ceremony. Julian was the first person to receive a DSc from the University of Wales in Forestry, and was awarded his OBE for services to “Forestry and the Third World”. He is Chair of the Forestry Commission’s Expert Committee on Forest Sciences, a past-president of the Institute of Chartered Foresters and has published numerous books and research papers on both tropical and temperate forestry.

Healthy and sustainable student recruitment for forestry@bangor

How can the 'state of a profession' be judged? Opinions abound in forestry as in any other profession, but reliable evidence to support such opinions can be hard to track down. One important measure of the state of any particular profession is the number of people wanting to enter it by enrolling on an appropriate course of study. By this measure, the state of forestry as a profession, as judged by student interest and recruitment at Bangor University, is in a healthier position than it has been for perhaps a decade or more. September 2017 saw 22 new students register for the [BSc Forestry](#) / [BSc Conservation with Forestry](#) degree programmes, an increase of more than 100% on the intake for the previous year. Further, several students have registered on the brand-new [BSc Geography with Environmental Forestry](#) degree, a unique combination of these two strengths of Bangor University. Every new undergraduate student has opted to join the [Institute of Chartered Foresters](#) as a student member (as well as a sizeable proportion of MSc students), further underlining their commitment and enthusiasm for the subject. As a result, forestry@Bangor students flooded the 100+ audience at the recent Wales Regional Group Annual Conference that we hosted in Reichel on the University Ffriddoed Site in Bangor. At postgraduate level, the numbers of residential, full-time MSc students studying forestry related programmes (including [MSc Environmental Forestry](#), [MSc Agroforestry](#), [MSc SUTROFOR](#) and [MSc SUFONAMA](#)) is a healthy 22 students, alongside 55 new part-time students on the [MSc Forestry](#) and [MSc Tropical Forestry distance learning](#) programmes. A lively community of PhD candidates working on forestry and related research further enhances the diversity and strength of forestry@bangor. Overall, this represents a significant increase in the total number of students on the forestry programmes at Bangor University compared with last year, bringing the total number of students studying forestry@bangor to well in excess of 200.



Welcome Week for new undergraduate and postgraduate students, September 2017 – Llyn Elsi, Gwydyr Forest, near Bangor © Mark Rayment



MSc Forestry Study Tour, April 2017 – Mabie Forest, Scotland © James Walmsley



Final year forestry students, March 2017 - North Wales, hosted by forestry@bangor alumni Charles Gittins (BSc Forestry 1987), © James Walmsley

forestry@bangor employability

Graduates of the forestry@bangor programmes continue to enjoy very high levels of success when it comes to gaining relevant, interesting and challenging roles within the profession. This success is due to the quality of the teaching and learning experience combined with the strong national and international links that forestry@bangor has established over more than a century. Successful graduates include both those who have come from a related background (perhaps introduced to forestry through family or friends and / or a rural upbringing), as well as those with completely different backgrounds. Since completing their BSc Forestry (and closely related) degrees in 2016 and 2017, many graduates have gained positions with Scottish Woodlands, Tilhill Forestry, Natural Resources Wales, Pryor and Rickett Silviculture, Redrock Forestry, and Forestry Commission England, as well as started a variety of PhD projects. Graduates from the MSc programmes in recent years have gone on to secure similar roles, with a number of the distance learning MSc students securing roles within the profession well before graduation. These include roles in community woodland management and with the National Trust, Woodland Trust, local government and private businesses. Our overseas students are also achieving similar levels of success with a whole host of different organisations, including national government ministries, international charities and development organisations, universities, colleges and research agencies.

forestry@bangor teaching innovations

Whilst there may be a physical distinction in location between our MSc students living and studying in Bangor, and those studying remotely via distance learning, [there is now very little to distinguish the learning experience or the subjects covered](#). Learning technologies enable full-time and part-time distance-learning students to study modules together, providing both groups with a high quality and stimulating education, with a strong sense of joint identity and community. A personal tutor system ensures that all students have access to necessary support and advice. Further, residential study tours bring full-time and distance-learning MSc students together to facilitate intensive, interactive and forest-based study. This now includes [UK forestry study tours](#) and a residential course in Bangor on [forest management planning](#).

Teaching innovations are equally evident in the undergraduate programme, including a new structure to the 2nd year which ensures that the key topics of forest health, silviculture, inventory, GIS, remote sensing, operational planning, landscape design and key legislation are covered in an integrated and coherent manner. Gone are the days when students crammed for exams and promptly forgot everything soon after!

forestry@bangor student achievements and awards

forestry@bangor students recorded a number of notable achievements in 2017. Samantha Howard (BSc Forestry 2017) was awarded both the [Best Student Award](#) by the [Institute of Chartered Foresters](#) and the Mary Sutherland award for the best Bangor University female forestry graduate. [Mary Sutherland](#), who graduated from Bangor in 1916, was the first woman to graduate with a forestry degree anywhere in the world. Following in her wake, Samantha graduated from Bangor with excellent grades and is now studying for an MSc at Aberystwyth University. [Felix Gregory \(BSc Forestry 2017\) was one of two students to receive a special mention by the Vice Chancellor in the graduation ceremony for his achievements](#), and was also awarded the Bangor Bursary by the Royal

Forestry Society for the best final year dissertation project. Felix typifies the trajectory of many forestry@bangor students, securing relevant, well paid and enjoyable employment (as an assistant manager with [Pryor and Rickett Silviculture](#)) well before graduating! Harry Thomas (MSc Forestry distance learning year 1) was awarded the [Phil Johnson Memorial Award](#) for the best mark in the MSc Silviculture module.

Student achievements were not restricted to various awards and prizes – this is discussed in the reports about (i) the forestry student society ([BFSA](#)) and (ii) our stellar [PhD candidates](#).

forestry@bangor staff

forestry@bangor staff are mentioned in various sections of this newsletter and their details can be found on our [website](#). They work alongside a whole range of other specialists both within and beyond the university, providing lots of great opportunities for interdisciplinary teaching and research.

forestry@bangor overseas

forestry@bangor had a number of overseas adventures in 2017, including a two week [residential study tour in Ghana](#) in collaboration with the Forestry Research Institute of Ghana, a symposium in Indonesia, a [research methods training course in Kenya](#) in collaboration with the [World Agroforestry Centre](#) (ICRAF), research trips to the [Smithsonian Tropical Research Institute](#) in Panama, a new research project in Costa Rica in partnership with [CATIE](#) (The Tropical Agricultural Research and Higher Education Centre), a new [Darwin Initiative project](#) in the Comoros with local NGO [Dahari](#), a multitude of presentations at the International Union of Forest Research Organisations' [125th Anniversary Congress in Germany](#), [research and training in northern Ghana under a new project with ICRAF](#) and CIFOR, and collaborations with researchers in a number of other countries.



MSc Tropical Forestry (distance learning) [Study Tour](#) in Kumasi and Bobiri Forest Reserve, Ghana. July 2017 © Genevieve Agaba



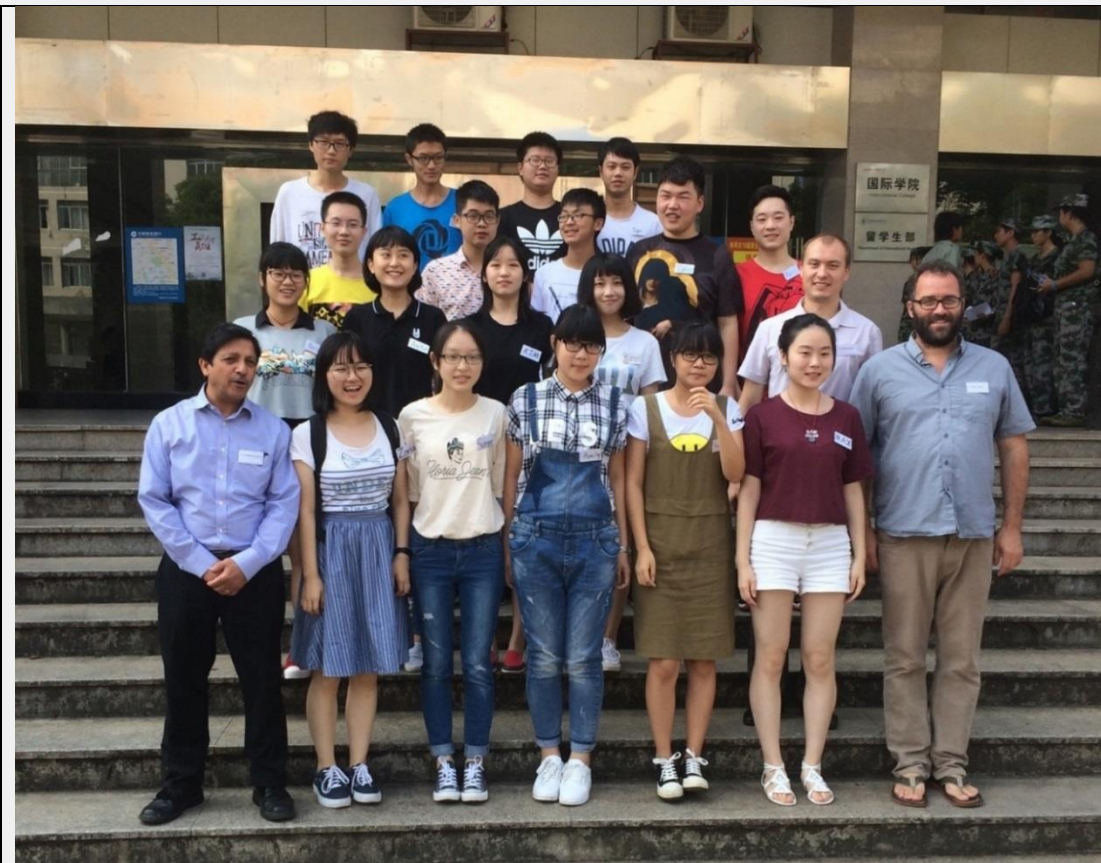
PhD Forestry student Simone Bianchi at the IUFRO 125th Anniversary Congress in Freiburg, Germany. September 2017 © Genevieve Agaba



Genevieve Agaba with Bangor MSc and PhD students and their fellow training course participants and farmers in Kenya. June 2017 © Dickson Mauki.

forestry@bangor in China

A key driver for the establishment of a [Bangor College China](#), a new campus of Bangor University established in Changsha, Hunan Province jointly with the Central South University of Forestry and Technology, was the strong track record of forestry@bangor for excellence in teaching and research. Since 2015, forestry@bangor staff have been visiting China and teaching Chinese Bangor University students – where in fact we now have nearly as many undergraduate forestry students as we do in Bangor! After successful completion of part of their degree in China, and subject to passing English language requirements, these students can either transfer to Bangor to complete their degrees, or complete them in China. This year, we've seen the first cohort of Chinese students transferring to Bangor, alongside 10 UK students continuing from their first year as well as an exchange student from the University of New Brunswick, Canada. What in the past would have just been 10 UK students studying forestry in the second year, is now a much healthier and more diverse 16, making for a vastly enriched teaching and learning experience for students and staff alike. The experience of this first cohort to transfer from Bangor College China will surely influence whether, and how many, others follow a similar path in future years. The early indications are that they are settling in well and enjoying their new learning environment in north-west Wales!



forestry@bangor students in Changsha, China in October 2016, pictured with forestry@bangor. staff including:

Tim Pagella (PhD, 2011) (front row – furthest on right): Course Director for the forestry undergraduate programme in China;

Madan Gautam (front row – furthest on left): Senior Lecturer in Forestry, Bangor China College and forestry@bangor alumnus (MSc Environmental Forestry, 1991);

Mykola Kutia (second row – furthest on right): Lecturer in Forestry, Bangor China College.. © Andy Smith

BFSA (Bangor Forestry Students Association)

BFSA, founded in 2005 by James Walmsley (PhD Forestry 2009) and Martin Price (PhD Forestry 2008), continues to go from strength to strength. George Dennison is now serving his second term as President, alongside an enthusiastic, resourceful and dedicated committee. In the summer of 2017, George and Tom Henson (BSc Forestry year 3) attended the International Forestry Students Association (IFSA) Annual Symposium (IFSS) in South Africa, gaining valuable insights into forestry from fellow students from across the planet. Partly as a result of his hard work with IFSA, on behalf of BFSA, George is now acting as the northern European representative for IFSA, as well as working as a student ambassador for the Tree Charter. BFSA continues to organise a regular series of evening guest lectures with speakers from across the UK forestry and related professions, as well as regular 'work parties' at the university's [Treborth Botanic Garden](#), local National Trust woodlands and local community-managed woodlands. BFSA has coordinated attendance for one of their members, Spencer Reagan, to [attend COP23 in Bonn, Germany in November 2017](#), as part of efforts to increase the level of dialogue between the foresters of tomorrow and ongoing international climate change negotiations. Spencer is a BSc student in the Faculty of Forestry at the University of New Brunswick (UNB), Canada and he is currently with us in Bangor on an exchange year. BFSA also made arrangements for another student member to attend the UNEA-3 in Nairobi, Kenya, in December 2017.

At the first national forestry students conference, organised and hosted by the [Royal Forestry Society](#) in October 2017, [BFSA was successful in winning £4,000 worth of specialist Haglof mensuration equipment](#), ensuring forestry students will benefit from learning how to use the latest technology.



Tom Henson (BSc Forestry year 3) and George Dennison (MFor Forestry year 3) in South Africa for the International Forestry Students Association Annual Symposium. July 2017 © George Dennison



James Walmsley, George Dennison and Alec Dauncey (BSc Forestry 1981, PhD Forestry 2016) (outside the Thoday building) with the new Haglof mensuration equipment. October 2017 © Genevieve Agaba

forestry@bangor PhD excellence

During the past year there were notable successes by our graduating forestry PhD candidates, who were not only awarded their doctorates but also had a number of prestigious international journal papers published from their research.

forest management and conservation

Four PhDs produced substantial new knowledge in diverse aspects of forest management and conservation. Fritz Kleinschroth has achieved a major impact with his research providing key objective scientific evidence in the controversial debate about logging roads and certification of timber production in the Congo Basin. Based on his PhD research, which combines innovative remote sensing analysis, ecological forest inventory and spatial modelling, he has had five papers published during 2016-17 in journals ranging from *Bois et Forêts des Tropiques* to *Conservation Biology*. Fritz has gone on to a post-doctoral research position at the world-renowned ETH Zürich University in Switzerland.



Different stages of forest vegetation recovery after abandonment / closure of logging roads in the Congo Basin © Fritz Kleinschroth

Sarobidy Rakotonarivo’s PhD research on improving the estimation of local welfare costs of forest conservation in low-income countries using choice experiments, based on Madagascar, has resulted in three journal papers. These have substantially advanced theory and evidence about the utility of discrete choice experiments as a key method in environmental economics research. This is linked to her input into SENRGY’s flagship research project “[Can paying for ecosystem services reduce poverty?](#)”, which has exposed serious risks that such forest conservation schemes do not compensate the most vulnerable members of society who often bear the heaviest costs. Sarobidy has gone on to a post-doctoral research post at the University of Stirling.

Linda Chinangwa’s research on community-based natural resource management in Malawi has resulted in a further three papers during 2016-17 on the effects of forest co-management on livelihoods, welfare and forest condition. She has also determined the criteria used by communities themselves to assess the success of such programmes.

Arbi Sarkissian’s PhD research on exploring payments for ecosystem services in the context of native tree planting in Lebanon, has resulted in its first journal paper on landowner perceptions of reforestation incentives. Arbi has just taken up the post of Lecturer in Forestry at the [Bangor College China](#), in Changsha.

agroforestry

In the area of agroforestry, Syed Rahman has had four papers published from his PhD on the factors influencing adoption of tree farming by smallholder farmers in Indonesia and Bangladesh. This interdisciplinary research used socio-economic analysis to determine effects of agroforestry on livelihoods and the pressure on existing forests. Policy implications addressed the challenges of achieving environmental and economic sustainability in such complex landscapes. Syed’s work was carried out in collaboration with the [Centre for International Forestry Research \(CIFOR\)](#).



Field research team in Java, Indonesia, interviewing a farmer who has adopted agroforestry, during the field-work of Syed Rahman's PhD study into the socio-economics of this system © Syed Rahman

Sayma Akhter researched the wild mango species *Mangifera sylvatica* and has published two papers on its potential as a cocoa butter alternative, while showing how climate change may impact on its habitat distribution in Bangladesh.

Hosea Mwangi's PhD research modelled the impact of agroforestry on the hydrology of the Mara River Basin in East Africa and has resulted in two papers in international hydrological journals.

Maria da Penha Padovan completed a joint PhD between [CATIE](#) and Bangor on water relations in coffee agroforestry systems in Nicaragua. Her second paper has just been published on how two tree species influence the rate of water loss by transpiration and soil evaporation in shade coffee systems.

Genevieve Agaba researched coffee farmers' local knowledge of trees integrated with coffee in Kenya using a novel ranking method to assess the knowledge and compare it with scientific literature. The first [paper](#) to come out of this research was published in *Experimental Agriculture*.

Emilie Smith Dumont published a [paper](#) in *Experimental Agriculture* on the use of local knowledge and structured stakeholder engagement in designing appropriate agroforestry options for farmers, based on her PhD research in the Democratic Republic of Congo with ICRAF.

Eefke Mollee's recently completed PhD led to a [paper](#) being published in *Land Use Policy* about the collection of wild urban plants and their use as food and medicine in Kampala, Uganda.

forest ecology and soils

There were three completed PhDs in the field of forest ecology and soils. Géraldine Derroire has published three papers from her PhD on the recovery of secondary tropical dry forests after pasture and cultivation agriculture. She has made new discoveries about the processes through which isolated remnant trees and early colonising trees influence the subsequent trajectory of the forest succession. Géraldine is now a forest ecology researcher with the French institution [Cirad](#) and scientific manager of the [Paracou Research Station](#) in French Guiana, Amazonia.



Secondary tropical dry forest, Costa Rica – the focus of the PhD study by Geraldine Derroire. © Geraldine Derroire.

Anna Gunina's PhD researched the response of soil microbial communities to afforestation with pure and mixed tree species, and how chemical variation in soil organic matter influences the rate of microbial uptake, resulting in two published papers.

Relena Ribbons' PhD "Seeing the forest for the trees: Tree species effects on soil microbial communities and nutrient cycling dynamics" has already resulted in a paper on the functional variation in nitrogen cycling in forest soils under four tree species.

forestry@bangor research

forestry@bangor staff are engaged in a wide range of forestry-related research effort both in the UK and overseas, leading to high quality and high impact outputs which improve understanding, aid decision-making, improve livelihoods and also ensure a learning experience of the highest quality for students.

Tree disease and forest health

Under a collaborative project called [FOREMOD](#) between forest ecologists at Bangor University, Forest Research and bioeconomic modellers at Stirling, St Andrews, Cambridge, and Warwick Universities, [John Healey](#) has co-authored four papers on the effects of forest disease on optimal forest rotation and how payments for multiple ecosystem services, and planting tree species' mixtures, affect the economics of tree disease impacts. A further study shows interesting insights on the factors affecting the willingness of the UK public to pay for forest disease control. John presented a paper on this research at the IUFRO 125th Anniversary Congress in Freiburg, Germany.

[James McDonald](#) and his research group have made [substantial advances](#) in knowledge on the serious threat of acute oak decline, in collaboration with the UK government's Forest Research agency, with substantial funding provided by [Woodland Heritage](#). Their four papers published in the last year report new discoveries of the association of this disease with a genetic shift in a consortium of bacterial species. They have shown for the first time how two of these bacterial species, in combination with a species of bark-boring beetle, cause the diagnostic necrosis of oak tissue associated with acute oak decline.

Agroforestry and ecosystem processes

[Andy Smith](#) leads the [MULTI-LAND research cluster](#), which focuses on agroforestry and is funded by the Welsh Government's National Research Network in Low Carbon, Energy and the Environment. Its first major output was based on research led by [Mark Rayment](#) on [tree shelterbelt effects on wind speed reduction and thermal benefits to sheep](#). This research, in partnership with the [Woodland Trust](#), has received widespread coverage in the media, including on the [BBC](#) and its flagship documentary series, [Countryfile](#)., as well as on [ITV](#) and other media outlets. Andy ran an innovative display [on carbon fixation by tree leaves at the Glastonbury festival](#), in collaboration with Oxford and Lancaster Universities, as part of Multi-land's work to disseminate its science to the public. The project sites in North Wales serve as a great teaching and learning resource, with post-doctoral researcher [Hilary Ford](#) and PhD student [Bid Webb](#) frequently hosting visitors and showing them the experimental plots they have set up there.



Bid Webb and Hilary Ford explaining the MULTI-LAND project's hedgerow experiments to a group of MSc students. October 2017 © Genevieve Agaba.

Andy has co-authored a notable series of papers published in 2016-17, drawing on findings from the *BangorDiverse* forest diversity and ecosystem function experiment at [Henfaes](#), showing how tree species identity influences the vertical distribution of soil carbon, and the implications of tree diversity experiments for design of sustainable forest plantations. He has also published on how elevated atmospheric carbon dioxide concentrations (a long-standing forestry@Bangor research focus) affect tree leaf physiology.

[David Styles](#) led a paper, co-authored by SENRGy colleagues [Sopan Patil](#) and [Tim Pagella](#), on the contribution of bioenergy willow to the ecosystem services of climate regulation, energy provisioning and water purification, using life cycle assessment modelling in which he is a world leader.

[Fergus Sinclair](#) co-authored a number of papers and book chapters published in 2016-17 exploring the roles of trees in agricultural landscapes in the tropics and the decision-making underpinning their integration with crops in smallholder farming systems. Co-authors included SENRGy colleagues [Genevieve Agaba](#), [Tim Pagella](#) and current PhD Agroforestry candidate [Emilie Smith Dumont](#). The papers were published in *Agroforestry Systems*, *Experimental Agriculture*, *Agricultural Systems*, and *Land Use Policy*. The book chapters form part of a newly released Earthscan book: [Sustainable Intensification of Smallholder Agriculture: an integrated systems research approach](#).

Rob Brook was invited to guest edit a [Special Issue on Agroforestry for the Tropical Agriculture Association's Agriculture for Development newsletter](#) and worked with colleagues Genevieve Agaba and Tim Pagella to include a variety of articles showcasing research recently undertaken by young researchers across the world. From looking at agroforestry adoption in India by SENRGy colleague [James Brockington](#), to assessing the role that fruit trees play in alleviating food security in Indonesia by [Pippa Jones](#) and Mark Rayment, the Special Issue illustrated how wide-ranging and far-reaching our research activities are in this area.



Smallholder mixed-farming systems in eastern Uganda. May 2017 © Genevieve Agaba.

Tropical forests

A landmark paper from the “Can paying for ecosystem services reduce poverty?” project, led by [Julia Jones](#), reports new findings on the impacts of community forest management on human economic well-being across Madagascar.

During his first year as the new Lecturer in Forest Sciences, [Lars Markesteijn](#) has published two notable papers reporting on how forest soil carbon stocks are regulated by soil chemistry impacts on fine roots, and how leaf variability within species varies over a polar to tropical diversity gradient.

New lecturer in Environmental Geography, [Simon Willcock](#) has a strong track record in tropical forest science publishing five papers during 2016-17 on an integrated pan-tropical biomass map, diversity and carbon storage across the tropical forest biome, land cover change and carbon emissions over 100 years in Tanzania's Eastern Arc Mountains (an African biodiversity hotspot), and sustainable forest harvesting and deforestation in Malawi.

[Morag McDonald](#) and forestry@Bangor alumnus Kurt McLaren were co-authors of a landmark high-profile analysis of plant diversity patterns in neotropical dry forests and their conservation implications that was published in the prestigious journal *Science*.

John Healey, together with Bangor alumnus Desalegn Daye and former staff members [Zewge Teklehaimanot](#) and Pierre Binggeli, were co-authors of a high-profile assessment of conservation of Ethiopian church forests: threats, opportunities and implications for their management.

Finally, a group of the University's MSc Tropical Forestry (distance learning) students published the research that they carried out as part of their tropical forestry study tour in Ghana (a key component of their degree course) in the [International Forestry Review](#). They showed that one of the biggest constraints on the successful adoption of reduced impact logging is the poor flow of information among key stakeholders, which indicates clear opportunities for implementing reduced impact logging.

forestry@bangor in the global and national university league tables

Bangor is now ranked a world “top 100” university for “Agriculture and Forestry” according to the 2017 QS World University Rankings (placing us in the top five in UK). Bangor also came 6th in the 2018 UK University league tables for Agriculture and Forestry published by both the Times and the Guardian, placing Bangor top in Wales and much higher than any UK university teaching forestry.

forestry@bangor and political decision-making

During the first part of 2017, forestry@bangor staff member [Dr Alec Dauncey](#) was invited to the Senedd in Cardiff to give evidence to the National Assembly for Wales Climate Change, Environment and Rural Affairs Committee, who were undertaking a review of the Welsh Government’s Woodlands for Wales Strategy. Alec was able to highlight key relevant research undertaken by forestry@bangor and provide invaluable insights to the committee on the many less obvious aspects of forestry, including the complexities, challenges and opportunities relating to the creation of new woodlands.

In July, Tim Pagella and John Healey made an invited presentation to the Woodland Strategy Advisory Panel for Wales on “Assessment of the factors limiting the availability of sites for woodland expansion in Wales and strategies to overcome them”. John, together with other SENRGy colleagues, also discussed current issues concerning woodlands in Wales with Lesley Griffiths, AM, the Cabinet Secretary for Environment and Rural Affairs in the Welsh Government during her visit to SENRGy’s [Henfaes Research Centre](#).

UK Government Environment Minister [Thérèse Coffey visited Bangor in October 2017](#). She took the initiative to visit Bangor entirely because of the University’s reputation in forestry education and research. The headline in the Defra blog recording the event was suitably titled “[Minister Coffey celebrates first-class forestry research in Wales](#)”. It also stated that she visited “to hear from some of the best and brightest on their aspirations for the forestry sector” while noting that Bangor University was the first university in the UK to teach forestry. The blog continued “the Minister heard about the courses on offer and huge growth in new students studying forestry – with the university’s intake for forestry degrees this year up by more than 100 per cent on last year. The Minister also spoke with recent graduates about how the industry can continue to attract new talent, with many having gone on to varied roles in private forestry, community woodland management, local government, and organisations like the National Trust.”

Speaking after her visit, the Environment Minister said: “A thriving forestry sector is a vital part of a healthy environment, and it has been great to see the level of talent, ambition and enthusiasm this industry is attracting while at Bangor University today.” forestry@bangor alumni Chris Hamill and Nick Hill (both MSc Environmental Forestry, 2015) played a key role in the success of the visit.

Future of forestry@bangor

With regards to our teaching, we are confident that we will continue to attract the best students to study forestry at both undergraduate and postgraduate level. The broad range of expertise of our staff, our excellent reputation for high quality teaching and learning and the successes of our alumni, both recently and historically, provides the basis for this confidence.

In research, we look forward to the continuing success of our PhD students researching a wide range of research topics around the world. In the UK, we hope to further strengthen our collaboration with Forest Research. This will capitalise on the recent relocation of the Head of Forest Research in Wales, Tom Jenkins (a former forestry@Bangor staff member), to an office in SENRGy's Thoday Building. We also look forward to the research outputs from the School's substantial programme of research in the flagship [MULTI-LAND](#) and [P4GES](#) research projects.

There are certainly challenges ahead, including the huge economic uncertainty relating to Brexit, the financing of university degrees and the ever-changing nature of higher education. But in this short review of the past year of forestry@bangor there are a multitude of reasons to be more optimistic than some commentators suggest. The new president of the Royal Forestry Society, forestry@bangor alumnus Andrew Woods, recently expressed concern about the future of the forestry profession '...the danger is that without the demand for [higher education] ...colleges will discontinue these [forestry] subjects.' This may perhaps be the case in other UK colleges and universities, but the current success of forestry@bangor provides absolutely no basis to support this concern!

We are always delighted to hear from our alumni, near and far, so do feel free to visit us at forestry.bangor.ac.uk, drop us a line via forestry@bangor.ac.uk or call us on +44(0)1248 3882281, or stop by if you are ever in the vicinity of your alma mater!

James Walmsley

John Healey

Genevieve Agaba

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