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[www.ucc.ie/en/planforbio](http://www.ucc.ie/en/planforbio)

## WELCOME

Welcome to the 12th issue of the PLANFORBIO Research Programme Newsletter. This newsletter is produced twice yearly and provides informal updates on the research activities of the PLANFORBIO Programme and other relevant news. This issue features news from the recent Second International Conference on Biodiversity in Forest Ecosystems and Landscapes, which was hosted at University College Cork. This was a wonderful event which provided a platform for dissemination of findings of the extensive body of work being carried out by PLANFORBIO researchers past and present, and offered global experts in this area the opportunity to meet and discuss emerging priorities and research findings.

## International conference on forest biodiversity

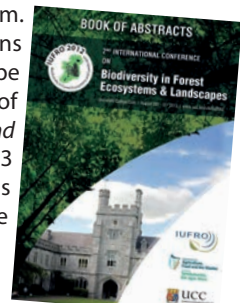
An international conference on forest biodiversity was hosted at University College Cork during the last week of August ([www.ucc.ie/en/iufro2012](http://www.ucc.ie/en/iufro2012)). This event was sponsored by the Dept. of Agriculture, Food & the Marine, the Environmental Protection Agency, Science Foundation of Ireland, the Heritage Council and Fáilte Ireland. Three days of oral and poster presentations were held at the Western Gateway Building, UCC, with a mid-conference excursion, including presentations by Irish researchers, to Killarney National Park on Thursday 30th August. This event built on the first conference in the series which was held in Kamloops, Canada in 2008. Based on the success of these two events, a third conference in this series will be held in New Zealand in 2016.

The aim of the conference series is to 'Share knowledge, discuss new trends, reflect on future directions in biodiversity management for sustainable forestry, and provide a stronger scientific basis for biodiversity management in forest landscapes in the light of climate change'. This event was a great success and brought together forest researchers, practitioners and policy makers from as far afield as North America, Asia and New Zealand to share cutting-edge research findings across a range of topics including climate change, wildlife conservation, ecosystem functioning and provision of environmental services. The event was attended by 145 delegates and included 64 oral presentations and 50 posters on topics such as conservation management, biodiversity indicators, climate change and invasive alien species. Keynote addresses were delivered by Prof John O'Halloran from University College Cork, Prof John Spence from the University of Alberta, Canada and Prof Martin Hermy, Catholic University of Louvain, Belgium. This was the first time that an international conference on forest biodiversity was held in Ireland, which helped to showcase Irish forest biodiversity research, and allow Irish scientists, forest managers and policy makers to interact with international experts in this field and attend scientific presentations on cutting edge research in this field.



Conference organisers Anne Oxbrough and Sandra Irwin with keynote speakers Martin Hermy, John Spence and John O'Halloran.

The conference highlighted the need for greater integration of approaches at larger scales (landscapes or watersheds) with those at the stand and smaller scales. This can be achieved by a greater understanding of ecological processes and the functional relationships between species. Sustainable forest management can be better achieved through the development of appropriate assessment tools, though the usefulness of biological indicators is typically restricted to relatively narrow taxonomic, geographical or habitat groupings. Moving forward, future research should aim to achieve greater integration of approaches across spatial scales and seek to further explore the link between biodiversity and ecosystem services including those related to the economic and social values of forests. Planners and researchers should also be cognisant of the threats to forest biodiversity posed by invasive alien species, climate change and social or commercial pressures, and should aim to develop programmes of research to better understand these threats and how best to mitigate them. Selected oral presentations from the conference will be published in a special issue of the journal *Forest Ecology and Management* in early 2013 and the book of abstracts is available for download at the conference website.





# CONFERENCE DELEGATES VISIT IRISH NATIVE WOODLANDS AND PLANTATION FORESTS

Delegates at the recent IUFRO second international conference on biodiversity in forest ecosystems and landscapes at UCC participated in a one day field trip to Killarney National Park and nearby plantation forests. They were treated to a day of open air talks by members of the PLANFORBIO research programme and government agencies on the wealth of biodiversity that can be found in Irish forests and how forest management plans incorporate biodiversity conservation. Daniel Kelly and Fraser Mitchell, Trinity College Dublin, gave a joint presentation on the yew and oak woodlands of Killarney National Park while Eddie Daly, Waterford Institute of Technology made a presentation on rhododendron invasion in the Park.



Conference delegates in Killarney National Park during the recent international conference on biodiversity in forest ecosystems and landscapes at UCC.



Daniel Kelly, Trinity College Dublin, giving an open-air lecture on oak and yew woodlands in Killarney National Park.



Yew woodland at Killarney National Park



Conference delegates on their way into an old-growth spruce plantation at Gougane Barra.

## UCC student wins best poster award at IUFRO forest biodiversity conference at UCC

Emily Goldstein, University College Cork, Ireland was winner of the best student poster award at the second international conference on biodiversity in forest ecosystems and landscapes at UCC. Emily's poster on 'The southern range expansion of invasive grey squirrels in Ireland: Determining the frontier and surveying the population' was judged by an international panel of three experts. The award for the best student presentation went to Bastian Egeter, University of Otago, New Zealand for his talk on 'DNA-based detection of frog predation by introduced mammals in New Zealand forest ecosystems'.



Prof John O'Halloran, UCC presents Emily Golstein with the award for best student poster at the recent IUFRO conference at UCC.



Conference delegates at Western Gateway Building, UCC

# The biodiversity of forest roads

Linda Coote

Open areas are a natural part of forests, supporting plants and animals that can't survive in the shady forest interior or in surrounding intensively managed agricultural or built-up land. Because the majority of forests in Ireland are predominantly conifer plantations, the levels of light inside the forest are very low compared to our deciduous semi-natural woodlands, making open areas particularly important. Approximately 10% of the total Irish forest area is made up of open areas, with roads and rides the most common types. These roads and rides are usually built to provide access for forestry operations and to act as fire breaks, but their value for biodiversity is being increasingly recognised. Roads are particularly interesting because, unlike other open spaces, which contain remnants of the previous land-use type, they also contain new habitats, including the road surface itself and any associated ditches and banks. Roads are also regularly disturbed during construction, use by traffic, water flow and maintenance and repair operations. This means that a wide range of species can be found there and the types of species found can constantly change.



Road through a plantation forest.

In forest plantations, as the trees grow, the amount of shade cast on the road area will increase. During the BIOFOREST plants, spiders, hoverflies and birds of roads in mature plantations were studied. It was found that the width between the trees across the road was important in determining the amount of light received in the road area itself and therefore the types of plants and animals found there. For example, open habitat plant and spider species were not supported by narrow roads, while wider roads could support more native tree and shrub species, which were particularly important for birds and hoverflies. Further information



An intersection of two forest roads at Balrath Wood, Co. Mayo.

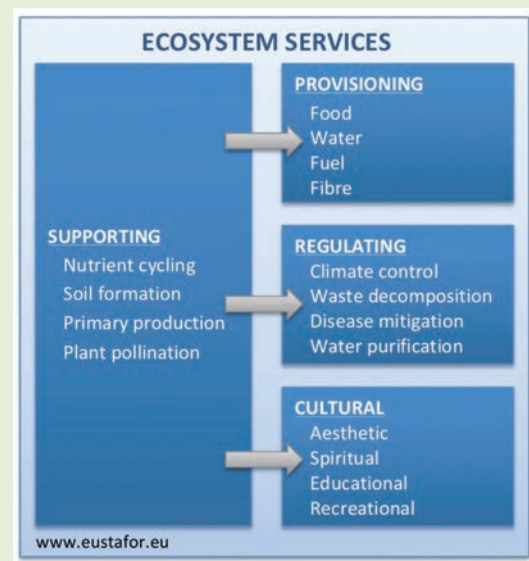
can be found in the BIOFOREST project report. For this reason, BIOFOREST researchers set up an experiment in eight plantations that had been felled and were being replanted with Sitka spruce. In each forest, one section of road was planted with the recommended trunk to trunk distance across the road of 15m and one section with double this width i.e. 30m. An initial survey was carried out in 2005 after the trees had been planted and the sites were then revisited in 2010 as part of the BIOPLAN project.

Within these five years, the trees had grown from about half a metre tall to more than two and a half metres tall. However, the amount of shade they cast on the road area was still quite low, meaning that little difference was found between the experimental treatments for plants, spiders or birds at this early stage. The cover of shrubs had increased in many of the plantations though, particularly those that weren't grazed by deer or sheep. These shrubs provided habitat for plant and spider species normally associated with forests and for ground nesting birds; a change from 2005 when mainly open habitat species were found. However, where shrub cover was too high, most other plant species were outcompeted. The resurfacing of roads and clearance of drains also had a big impact on plants, and therefore also on the animals associated with them and with the road and drain habitats. As the forests are resurveyed through the forest cycle we hope to follow the changes in plants and animals taking place there and determine the longer-term effects of the experimental widening. The first scientific paper on this work 'Bird Communities of Forest Roads: preliminary findings of a long term study' by Conor Graham et al., has recently been accepted for publication in *Irish Birds*.

## Valuing the ecosystem services of forests in Ireland

Benefits derived from nature are called ecosystem services. In addition to timber production, forests provide a variety of ecosystem services crucial to sustaining human societies such as carbon sequestration, water purification, recreation and habitat for a wealth of plant and animal species. The United Nations Millennium Ecosystem Assessment model divides ecosystem services into four categories as outlined below. Forest ecological services make significant direct and indirect contributions to national economies and human welfare and in recent times advances have been made in developing suitable valuation methods for these services.

A team of researchers from UCD, UCC, Teagasc and UL, led by Dr Áine Ní Dhubháin, has been awarded a research grant of just over €200,000 to look at this topic in the latest funding round of the Dept. of Agriculture, Food and the Marine. The two year project will employ one post-doctoral researcher and two MSc students and will use benefit transfer and other non-market evaluation tools to model the value of forest ecological services in an Irish context. Recruitment of staff for this project is currently underway.



**Best wishes to Anne Oxbrough who worked on both the BIOFOREST and FORESTBIO projects before taking up a Marie Curie Fellowship at UCC and the University of Alberta in Canada. Anne has now left UCC to take up a lectureship position at Edge Hill University in the UK.**

# Managing forests for ecosystem services: can spruce forests show the way?

Anke Dietzsch

Early in October, PLANFORBIO researchers Linda Coote, Lauren Fuller, Anne Oxbrough and Anke Dietzsch crossed the Irish Sea and made their way to the Heriot-Watt University in Edinburgh to attend the International Conference "Managing Forests for Ecosystem Services: Can Spruce Forests Show the Way?". This meeting was hosted by the IUFRO Working Party 1.01.08 – "Ecology and Silviculture of Spruce" and attracted about 100 delegates from around Europe, North America and New Zealand. Presentations on forest management made up the main body of the meeting and included talks on thinning regimes, multi-functional forestry, forest diversification, wind-risk modelling and continuous-cover forestry. However, Anke's talk

on multi-taxonomic diversity responses in Irish spruce plantations as well as Linda's poster on comparing biodiversity in spruce plantations and semi-natural woodlands, Lauren's poster on spider diversity in forest road verges and Anne's poster on arthropod diversity in spruce vs. mixed broadleaf-spruce plantations contributed towards a wider ecological perspective and were received with great interest. These four presentations all highlighted the importance of ecological research to identify factors (e.g. stand structure and tree diversity) associated with the diversity of different taxonomic groups and to inform management decisions. At the mid-conference field trip to the Cowl and Trossachs Forest District, members of Forestry Commission

Scotland brought participants to various forest sites and explained the challenges of managing for and delivering multiple ecosystem services, such as recreational use, timber production and biodiversity. As a further highlight, all participants were invited to an official reception at Edinburgh Castle, at which the Scottish Minister for Environment & Climate Change Paul Wheelhouse welcomed all attendees to Edinburgh and wished everyone a lively and fruitful conference. It was indeed!

For further information and download of conference presentations please visit [www.forestry.gov.uk/fr/iufro2012](http://www.forestry.gov.uk/fr/iufro2012).

## Planted forests on the globe: renewable resources for the future

The plenary meeting of the third international congress on planted forest will be held in Lisbon in May 2013. This will be preceded by 5 scientific workshops, one of which will take place in Dublin on 'providing and valuing ecosystem services'. The aim of this congress is to investigate the contribution of planted forest to sustainable development in the context of global changes. Further information can be found at [www.efiatlantic.efi.int/portal/events/2013\\_icpf](http://www.efiatlantic.efi.int/portal/events/2013_icpf).

## REMOTE TRACKING OF BIRDS

The annual BTO conference took place at Oxford Island, Northern Ireland in November. This event included a wide range of speakers from the BTO, RSPB and other Conservation Organisations throughout Ireland. John O'Halloran made a presentation on 'Tracking birds – from individual to population' outlining recent developments in Hen Harrier tracking technology at University College Cork. Central to this work is the development of a harness for attaching the GPS tracking unit to adult birds which detaches automatically after a number of days allowing the unit to be retrieved by fieldworkers. This is key to remote tracking of birds, such as Hen Harriers, who are precluded by their small size from carrying larger tracking units capable of automatically transmitting data during use.



Adult male Hen Harrier with GPS tracking unit attached using a harness developed at University College Cork

### PROJECT PARTNERS

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Programme Leader and PI:  
Prof. John O'Halloran

**Trinity College Dublin**  
PI: Dr. Daniel Kelly

**Waterford Institute of Technology**  
PI: Dr. Nick McCarthy

**Coillte**  
PI: Dr. Mick Keane

**Forest Research, UK**  
PI: Dr. Nadia Barsoum

## Research project: Assessing the use of forests by deer in Ireland

Deer populations in Ireland are expanding in range and management of the potential impact of these animals on forest and agricultural crops is essential. Dr Fidelma Butler, University College Cork, is leading a research team from UCC, Waterford Institute of Technology, Trinity College Dublin, National Parks & Wildlife Service, Coillte and the Agri-Food and Bioscience Institute of Northern Ireland, who have been awarded a research grant by the Dept. of Agriculture, Food & the Marine to examine this issue.



Red deer, photo RUTH CARDEN

Their three-year project got underway in early 2012 and seeks to quantify deer populations, habitat and silvicultural elements that influence local deer population densities and behavioural patterns that may lead to a higher risk of crop damage. The strategy that will be employed will assess local deer densities and damage levels and relate these to forest parameters such as tree species, forest age, structure and surrounding habitat. Methods for genetic fingerprinting of deer faecal pellets will be developed and used to estimate deer densities. The findings of this work will inform national deer management strategy in Ireland.

This project employs three full time researchers: Ruth Carden post-doctoral researcher UCC, Vincent Murphy, PhD student UCC and Ciara Powell PhD student WIT. Further information can be found at [www.ucc.ie/en/forestecology/Research/FORDEER](http://www.ucc.ie/en/forestecology/Research/FORDEER).

### FOR FURTHER INFORMATION

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