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## INSIDE THIS ISSUE

- A NEW FOREST MENACE 1
- KEEPING TABS ON RAPTORS IN EUROPE 2
- WHAT'S THE PMI (POST MORTEM INTERVAL) OF A DEADWOOD LOG? 2
- BENEFITS OF BIODIVERSITY 3
- GBO3 3
- EPIPHYTES ON THE MOVE 3
- THE SURVEY OF PRIORITY AND PROTECTED HABITATS 3
- GROUND VEGETATION FIELDWORK 2010 SUCCESS! 4
- INVERTEBRATE SUMMER SAMPLING 4

## WELCOME

The 2010 field season saw the first data collected on hen harrier movements using our own specially designed harness system, that allows GPS tags to be deployed on adult Hen Harriers, as part of the Hen Harrier project. This exciting development came at the conclusion of a number of years of design and trialling of the equipment by the hen harrier research team, led by Mark Wilson. Our best result was a four day record of one female's movements in the Ballyhoura mountains. Interestingly she ranged over a much larger area than we would have expected using the best available data, most of which comes from the UK.

The first summer of field work on our new BIOPLAN project (project 4 of the PLANFORBIO Research Program) with a new team of researchers was very successful and all researchers are now busy in the lab with samples collected over the summer. This is also the first time that we have worked with the Forest Research team in the UK, and the overlap in our research interests and areas of strategic importance for our two countries is already being exploited. The findings of the FORESTBIO research project are in the process of being published. A number of articles have already appeared in international journals and many more are in the pipeline. And so, although this project has been completed, work by the dedicated researchers to get the information into the public domain is ongoing.

## A NEW FOREST MENACE

Eddie Daly

The recent discovery of a pernicious plant pathogen in Co.s Tipperary and Waterford is causing much apprehension among forest owners and managers. *Phytophthora ramorum* is a species of water mould that is responsible for devastating tree plantations in California and Oregon. It was discovered in 1995 on tanoaks (*Lithocarpus densiflorus*) in California and subsequently in 2009 it was discovered on Japanese larch in southern England. In August of this year it was confirmed that the pathogen is active on this isle and not just on larch, but also on beech trees.

Our forest owners are understandably nervous about this recent discovery as *P. ramorum* (aka Sudden Oak Death), has infected large areas of economically important forest plantations in the USA. While the infection rate and subsequent damage to infected trees is not yet in the same league as that of the west coast of America, the potential the pathogen has, (particularly if it 'jumps' to one of our more economically sensitive crops,) is huge. The severity of symptoms differ slightly from species to species but they generally include dark spots on foliage and wilting new shoots along with bleeding cankers (sap bleeding from open wounds on the stem) on more severe cases of infection.

Many other woody species are susceptible to the pathogen including rhododendron, however it rarely is fatal causing only leaf die-back. Unfortunately infected rhododendron then becomes a host for the phytophthora becoming extremely important in the epidemiology of the disease as they act as an inoculum (the infected shrub becomes a medium for the pathogen enabling it to



A *Phytophthora* canker on a beech tree.

produces spores which are then released infecting nearby woody plants). In the US bay laurel (*Laurus nobilis*) is thought to be the main source of host for this disease in the forest. Here and in Britain rhododendron (and indeed cherry laurel) have been identified as the most likely forest species to harbour the potentially deadly disease.

Early protection is key to successfully controlling this menace. *P. ramorum* moves fast and mostly undetected through the landscape and any hope of slowing it down depends on detection and eradication early in the development of the infestation.

This is where our work with rhododendron control becomes even more important, as projects like ours and CABI's in Britain are the first line of defence in preventing *P. ramorum* becoming a problem in sensitive areas.



# KEEPING TABS ON RAPTORS IN EUROPE

Mark Wilson



Four years ago, scientists and conservationists involved in bird of prey projects put together an ambitious proposal to develop a pan-European network called EURAPMON, to harmonize monitoring methodology, identify gaps in monitoring effort, and raise the profile of raptor monitoring work across Europe. A major output of the project would be a database summarising monitoring work around Europe allowing scientists, policy makers and conservationists to quickly find out what they needed to know or, if they required more detailed information, who they could get this from.. Earlier this year the group finally obtained funding from the European Science Foundation, to turn this idea into a reality. I was thrilled to be invited to take part in a workshop intended to 'get the ball rolling' on EURAPMON, as well as to foster contact and collaboration between people working in the field of raptor monitoring. Most participants were either involved in work primarily 'for' raptors (i.e. using some aspect of raptor monitoring in order to enhance or promote raptor conservation) or 'with' raptors (i.e. using raptors as sentinels and indicators of the wider environment, particularly from an ecotoxicological perspective. Many were keen to hear about the Hen Harrier project, both in terms of the work we are doing with GPS tracking, as well as from a broader raptor monitoring perspective. Among the topics discussed at the workshop were how to go about compiling an inventory of existing research and monitoring, what form the final database should take and the types of data it should contain, what the needs of database users were likely to be and how best to cater for them, how EURAPMON could be made to contribute to best practice and capacity building in raptor monitoring. Possibly the most urgent issue dealt with was how the many different objectives of the project should be prioritised in the short term, in order to ensure that project achieved sufficient momentum to sustain its development beyond the lifetime of the existing funding. As all of this was crammed into just two and a half days, the workshop did not allow a lot of free time, but was very productive, and generated many interesting discussions that spilled over into evening activities. The workshop was made more enjoyable still by

the local community of Scopello, the village hosting the workshop, and Castellamare dell Golfo, the nearest town, who embraced the event and its participants with surprising enthusiasm and generosity, supplying the participants with delicious local food, and organising special events for us including an open air show by a local dance group themed on raptors, and a reception at which we were greeted by a group of schoolchildren, each of which was enthusiastically waving the national flag of one of the participants! At the end of the workshop there was a press conference for local and national papers, followed by an excursion through the local Zingarro reserve. Overall, the workshop was very worthwhile, contributing to the development of a programme that has the potential to hugely boost the profile and effectiveness of European raptor monitoring.

## WHAT'S THE PMI (POST MORTEM INTERVAL) OF A DEADWOOD LOG?

Rob Deady

The use of cross-disciplinary reading is often very useful in compounding conservation messages. The study of forensic entomology, for example, typically revolves around the close relationships that exist between necrophagous arthropods and the cadavers, on which they colonise. This ultimately aids in subsequent medicocriminal investigations and the advancement of rigour in scientific endeavours as new knowledge is gained.

The study of saproxylic entomology is similar. Typically saproxylic entomology revolves around the close relationships that exist between saproxylic arthropods (those insects that are reliant upon deadwood during some aspect of their lifecycle either directly or indirectly) and the decaying wood on which they colonise. To date, the ultimate goal of such research has been to better understand and conserve this threatened group of insects, the beneficiaries of their activity and the delicate micro-ecosystems which they form.

Interestingly, different assemblages of necrophilous and saproxylic arthropods occur at different stages of decay in relation to the site in question (whether wood or cadaver). The reason for this is simple. Many arthropods have specific environmental requirements, life history strategies and many may be specialists upon a particular food resource. Whether the sites being researched are decaying corpses or decaying logs, they will undergo "conditioning" that leads to the availability of different resources at different phases of decay. This conditioning may be as a result of "leaching" due to excessive rainfall or the creation of galleries and cavities via wood-boring beetles such as the Scolytids for example. This then leads to further conditioning like the establishment of basidiomycota and ascomycota fungi.

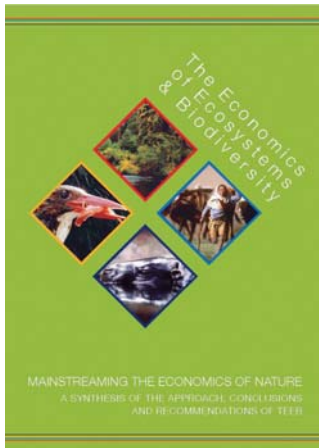
This phenomenon is known as succession and is a commonality to both disciplines also. Succession has been shown to be the driving force that "properly established" the science behind forensic entomology in the late 1800s. They described in detail how the successions of necrophilous insects are useful tools for estimating time since death or the post mortem interval (PMI) for example. We argue here that the importance of succession ought to be highlighted more in saproxylic conservation.

When it comes to large diameter deadwood in particular; the decay process can take decades. During this time, successions of different insect assemblages have been and gone and in some cases have become very complex, comprising of a myriad of different species. Subsequent harvesting or extraction of such deadwood may decimate an entire micro-ecosystem with complex niche heterogeneity that has taken years to form.....forever. As a consequence, it has become apparent that the activities of insects within decaying wood aid investigations within ecology in much the same vein as those that inhabit decaying humans, though a little less gruesomely.

# BENEFITS OF BIODIVERSITY

Sandra Irwin

The Final TEEB Report 'Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB' was released on 20 October 2010 at the COP10 (tenth meeting of the Conference of the Parties) biodiversity summit in Japan. The Economics of Ecosystem and Biodiversity (TEEB) study is a major international initiative to draw attention to the global economic benefits of biodiversity and to highlight the growing costs of biodiversity loss and ecosystem degradation. It also analyses the costs of the loss of biodiversity and the failure to take protective measures versus the costs of effective conservation. Initiated in 2007 and backed by the UN and countries including the UK, it is the first attempt to evaluate the economic value of "ecosystem services" - things that parts of the natural world do for free, such as providing fuel, purifying drinking water or protecting coasts from storms - on a systematic and global basis. It also focuses on the emerging area of biodiversity loss in the context of climate change and the importance of biodiversity in ecosystem resilience, i.e. their ability to continue providing services under changing environmental conditions. For further information see [www.teebweb.org](http://www.teebweb.org).



## GB03

Sandra Irwin

In May 2010, during the International Year of Biodiversity, the third edition of Global Biodiversity Outlook was launched. This is the flagship publication of the Convention on Biological Diversity and summarises the latest data on status and trends of biodiversity and draws conclusions for the future strategy of the Convention.

It is now clear that the target agreed in 2002 to 'achieve, by 2010, a significant reduction of the current rate of biodiversity loss at the global, regional and national level' has not been achieved. The state of biodiversity is declining, the pressures upon it are increasing, and the benefits derived by humans from biodiversity are diminishing. This target has, however, helped to stimulate important action to safeguard biodiversity. Actions in support of biodiversity include the creation of more protected areas (both on land and in coastal waters), the conservation of particular species, and initiatives to tackle some of the direct causes of ecosystem damage, such as pollution and alien species invasions. The report drew on a range of information sources, including National Reports, biodiversity indicators information and scientific literature and concluded that, with adequate resources and political will, the tools exist for loss of biodiversity to be reduced at wider scales. For further information see [www.cbgi.int/gbo](http://www.cbgi.int/gbo)



# EPIPHYTES ON THE MOVE

Daniel Kelly & Linda Coote

*Daltonia splachnoides* is a rare epiphytic moss species of humid western regions of Britain and Ireland. Although it is a very distinctive species when fruiting, it is tiny and easy to overlook. Until very recently, *D. splachnoides* has been considered a very rare and elusive moss in Scotland and Ireland. The Atlas of the Bryophytes of Britain and Ireland, presents records from just 13 Irish and 7 Scottish 10x10 km squares, almost all of them in the far west. In recent years Linda Coote reported a number of records of *D. splachnoides* high up in standing Sitka spruce trees in conifer plantations, suggesting that this species may be more widely present than previously thought, but hidden in our little-explored plantations – and often out of reach! In 2009, Sam Bosanquet and Chris Preston visited potentially suitable areas in south-west Ireland and found sixteen new colonies of *Daltonia*, allowing new insights into its ecology.

The recent increase in records of *D. splachnoides* from conifer plantations in Ireland is thought to result from two factors. The first is an awareness of the bryological interest of this habitat, in part because of the ecological studies of the BIOFOREST research team, and in part because of the parallel discovery of the spread of the liverwort *Colura calyptrifolia*, which has similar ecological requirements to *Daltonia*, in plantations in western Britain. Extensive afforestation of the Irish uplands during the second half of the 20th century has meant that, in recent decades, our plantations have become sufficiently mature and humid to provide substantial areas of habitat for *Colura*, *Daltonia* and other Oceanic species. The areas of Counties Cork, Kerry and Limerick where *Daltonia* has been found in plantations are upland, hilly country with numerous streams and large areas of conifer plantation, such as the Glanaruddery and Mullaghareirk Mountains. Given its ecology, there seems a reasonable chance that close scrutiny of willow bushes or spruce trunks in humid spruce plantations in the western Highlands of Scotland could produce new colonies of *Daltonia*, and a slim chance that it might spread from its current easternmost point in the Irish midlands to reach the south-east of Ireland, or even Wales or Cornwall.

# THE SURVEY OF PRIORITY AND PROTECTED HABITATS

Miles Newman

This summer saw the completion of the first phase of fieldwork towards assessing the impact of grazing in semi-natural native woodlands. My fieldwork took place in two EU protected habitats: old oak woodlands in Co. Wicklow and Co. Kerry, and Yew woodlands in Kerry.

Working in these old growth woodlands gives you a great chance of coming across interesting and rare flora and fauna, which were both fascinating and sometimes a challenge to identify. Some of the more interesting floral finds included the Killarney fern, St. Patrick's cabbage, several vibrant Orchids, the Marsh fern, *Lejeunea* liverworts, and *Sphagnum* mosses.

Not only were the plants of interest, I also encountered many butterflies (of which the most vibrant was the Silver-washed Fritillary), bees, red squirrels, badgers, baby pine martins, feral goats, and of course plenty of Red and Sika deer. I was even chased out of a few plots for disturbing some nesting wasps!

Although the start of the field season was wet, my water proofs remained mostly tucked away in my rucksack for the summer, here's hoping for a nice winter too.

# GROUND VEGETATION FIELDWORK 2010 SUCCESS!

Linda Coote

The Trinity ground vegetation team headed back into the forests this summer with one original and four new team members, including three students. Fieldwork began on the 31st May and the first eight weeks were spent resurveying roadside plots that had first been studied in 2005. Armed with a metal detector, we aimed to find the plots which had been marked with short marker posts and buried metal markers. Unfortunately, the height of the vegetation and the dense growth of brambles and gorse at some sites made this quite difficult and we ended up with plenty of scratches and thorns in the process. Despite this, we were successful in collecting the data, which included a number of surprises. Some areas which we expected to be 'open' had been colonized by self-sown spruce; other areas that we expected to be 'forest' were in fact virtually treeless, as the planted spruce had failed to take.

The remaining five weeks were spent resurveying plots in five sites that had been studied in 2002 before they were planted with trees. The aim was to examine what effect planting trees had on the biodiversity of different types of land. We also studied plots in five mature forests which form part of a European monitoring network. These mature forests were a pleasant relief from the young forests, which had proved very difficult to get around. Overall the weather was much kinder to us than in previous years and we had very few wet days. Even the midges seemed to be less than in previous years. Let's hope that next summer brings more of the same!



Aoife Matthews, Linda Coote and Aisling Walsh at a study site at Cardtown.

## INVERTEBRATE SUMMER SAMPLING

Lauren Fuller



Invertebrate laboratory work

The invertebrate research team had great fun out on fieldwork during the summer season this year. Scrambling over hills, crawling under trees, wading through rivers, and falling in bogs kept us busy and amused. But despite feeling like we were in army training camp we still managed to successfully complete the invertebrate sampling and collect lots of samples for the three sub-projects the BIOPLAN team are working on this year. We are now busy in the laboratory sorting and identifying the samples for our focus taxa; hoverflies, spiders and ground beetles. The malaise traps from all sites have been sorted for hoverflies, which are now being identified by Dr. Tom Gittings, and he is reporting a good result with some interesting species cropping up. The pitfall traps used in the road width experiment are sorted and the spiders and ground beetles are ready to be identified. The long-term monitoring site pitfall traps have also been sorted and the ground beetles are being identified by Elaine O'Brien for her fourth year project at UCC. And last but not least, the tracking site pitfall traps will be sorted and identified. This winter we will also be joined by Rebecca Martin who is just completing her PhD and will be helping us with spider and ground beetle identification.

### PROJECT PARTNERS

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