

## NEWS

### Message from the Acting TCBR Director

The Trinity Centre for Biodiversity Research (TCBR), based in the School of Natural Sciences, brings together researchers to provide a broad base of expertise in a range of biodiversity research areas, enabling research to cross traditional disciplinary boundaries to encompass biological, social, economic, legal and political aspects of biodiversity. This unique combination allows novel synergistic collaborations that are crucial for the development of national, European and international policy, and strategic recommendations to ensure global environmental sustainability.

This year the TCBR has focussed on the implementation of its Strategic Plan ([www.tcd.ie/tcbr/about/strategy.php](http://www.tcd.ie/tcbr/about/strategy.php)) by seeking funding, strengthening international collaborations and raising its profile. It launched the first TCBR PhD studentship and engaged with undergraduate and postgraduate students more actively including those from the TCD MSc in Biodiversity and Conservation and the Biodiversity in Our Lives group ([biodiversityinourlives.com](http://biodiversityinourlives.com)). This newsletter summarises recent achievements of the TCBR and you can also follow its activity on Facebook and Twitter (<https://www.facebook.com/trinitycentrebio> and <https://twitter.com/TrinBio>).

The TCBR welcomes new members and thanks all those who have contributed to its activities this year.

**Trevor Hodkinson**, Acting Director of the TCBR

### Proving pollinators help make life better for us all

Dr Jane Stout, TCBR Director, featured in a Q&A session for the Irish Examiner on foraging insects boosting crop yield. Oilseed rape fields are full of pollinators, including honeybees, bumblebees, solitary bees and hoverflies. Research has shown that excluding pollinating insects from oilseed rape flowers leads to a 27% decrease in the number of seeds produced, and a 30% decrease in seed weight per pod (in winter crops). The full article, published on the 7th of November, can be accessed at: <http://www.irishexaminer.com/archives/2013/1107/features/proving-pollinators-help-make-life-better-for-us-all-248759.html>

### New Postdoctoral Fellow

Danielle Green, an ecologist, specialising in marine ecosystems is a new postdoctoral fellow in the School on Natural Sciences. She is interested in all aspects of ecology, but her research focuses



on examining how human activities affect marine biodiversity, ecosystem functioning and services. Her research aims to provide scientifically sound recommendations for environmental management, feeding into policy to protect ecosystems.

She has always been fascinated by biodiversity which led her to study marine science at the University of Sydney in Australia, where she completed her honours degree at the Centre for Research on Ecological Impacts of Coastal Cities and worked briefly as a research assistant. She then pursued a PhD on invasive oysters on the other side of the world ([www.ucd.ie/marbee/dannielle\\_green.html](http://www.ucd.ie/marbee/dannielle_green.html)), graduating from University College Dublin in December, 2012. In 2013 she won a 2 year Irish Research Council (IRC) postdoctoral fellowship to continue her research career at TCD, working with Prof Carlos Rocha. Her research will focus on assessing the impact of microplastics on coastal marine ecosystems. The aim is to identify key pathways by which microplastics are entering marine environments and determine what ecosystem-level impacts they have when they accumulate. Throughout her research career she has discovered that the best way to tackle complex environmental issues is to use an interdisciplinary approach. Therefore, she collaborates with people from both within and outside the field of ecology in order to link traditional ecological methods with innovative, interdisciplinary approaches from other fields including biogeochemistry, ecophysiology and molecular biology.

### TCBR Student Wins Gold Medal

Alwynne McGeever, graduate in Plant Sciences was awarded a Gold Medal by the Board of Trinity College for outstanding performance in the final undergraduate examinations. We warmly congratulate Alwynne for her stellar achievement. She recently started research for a PhD with a TCBR studentship 'Quantification of tree population dynamics' with Prof Fraser Mitchell.

## NEWS

### Successful PhD

Congratulations to Sarah Mullen on completing her PhD on 'The role of biodiversity in the functioning of plant-pollinator interactions in semi-natural grasslands' and to Miles Newman on 'Impacts of large herbivores on biodiversity in Irish woodlands'.

### Discover Research Dublin

On 27th September, the BiodiversityInOurLives group hosted an event as part the 'European Researchers Night' initiative intended to introduce the public to the research conducted at universities, libraries, museums and more. The initiative took place simultaneously in 300 cities across Europe, and in Dublin was hosted by Trinity College Dublin and the Royal Irish Academy as 'Discover Research Dublin.'



Members of BiodiversityInOurLives team at the Discovery Research Dublin. Courtesy of Jane Stout.

'Biodiversity Jungle of Knowledge' was BiodiversityInOurLives' contribution, an event for groups of school children that took place at the European Commission building. The members of the group gave short, snappy and engaging 3-minute talks about their research and the importance of biodiversity before handing it over to children, who were provided with art supplies to make a piece depicting the importance of biodiversity in their own lives. The children exhibited a comprehensive understanding of the importance of biodiversity; from bees in making honey to trees providing us with paper. The artistic talents on display were impressive, as the children embraced the wide range of materials provided including colourful markers, felt, tissue paper and more.

The children were invited to bring their friends and families back in the evening to view all of the artwork at an exhibition, at which a public vote took place to select three winning artworks. The European Commission representation in Ireland will host a prize-giving ceremony to the students whose

artwork was selected. The event will be held in early December and chaired by Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science.



Some of the artwork created during Discovery Research Dublin. Courtesy of Jane Stout.

All of the artworks from the day will subsequently be available to view online at [www.biodiversityinourlives.com](http://www.biodiversityinourlives.com)

### Ecology Meets Art: the Relic Collection

Award winning Irish contemporary jeweller Eily O'Connell is truly a force to be reckoned with. Not only does she create exquisitely beautiful pieces inspired by nature, there is also a very tangible and purposeful conservation message behind all of her pieces. Struck by the urgent need to conserve our declining bee and wasp communities Eily visited TCBR researcher Aoife O'Rourke to find out more about our flying friends and pour over Aoife's bee and wasp collections under the microscope. She then went to create her poignant new collection 'Relic', in homage to these fascinating creatures and with the hope of raising awareness about their plight, and the actions we can all take to protect them.

When asked what was one of the main inspirations for her recently collection, Eily says '*Melittosphex burmensis*, which is the oldest fossil of its kind found recently, of an ancient bee encased in amber. It is quite unlike any other known bee as it appears to have characteristics of both bees and wasps and may even be a link between the two. Relic echoes these links, and if the bees continue to die will they become relics that we revere in our thoughts or could they return in time and take a different path of evolution?



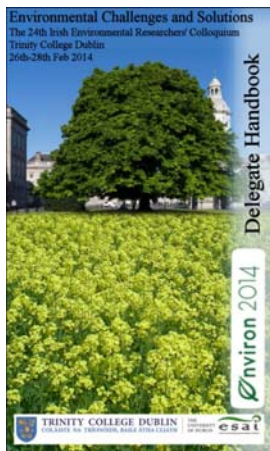
Courtesy of Eily O'Connell.

You can check out this fantastic new collection at the following locations:

<http://www.eilyoconnell.com/site/gallery/gallery2013-relic/>, and <http://eilyoconnell.bigcartel.com/>.

NEWS

**Environ 2014 Conference**



The annual conference of the Environmental Sciences Association of Ireland is coming to Trinity. It will run from Wednesday 26 February through to midday on Friday 28 February 2014 and will be hosted by the Schools of Natural Sciences and Engineering. The theme of ENVIRON 2014 will be environmental challenges and solutions so there is plenty of scope for all members of TCBR to get involved.

We are still in the planning stage but at this point we can confirm that the meeting will open with two workshops on Wednesday afternoon, one on scientific communication and another on green campuses. This will be followed by a forum discussion/debate in the evening. There will be three or four keynote plenary speakers on Thursday morning to be followed by a series of parallel sessions where we expect a lot of TCBR members to present their research. These sessions will also run on Friday morning. There will be poster sessions, an icebreaker reception on Wednesday evening and a conference dinner of Thursday evening. Two prizes, one for best oral presentation and another for best poster will be presented in memory of Max von Sternburg, a Botany postgrad and TCBR member who tragically died earlier this year. Ian Douglas is running the local management of the event and can be contacted at dougie502@gmail.com . The call for abstracts is now open so please log on to <http://www.esaiweb.org/environ2014/>

This is an ideal opportunity for postgrads and PIs in TCBR to showcase their research to a diverse audience of fellow researchers and stakeholders.

**Conference on Biodiversity and Sustainable Energy Development**

The **3rd International Conference on Biodiversity and Sustainable Energy Development** will be held in June 24-26, 2014 in Valencia, Spain. Biodiversity-2014 is a specially designed cluster conference with a theme 'Milestones of Innovative Scientific Research in Biodiversity and its Allied Areas' which covers almost all aspect and fields of

biodiversity. For more information visit: <http://www.omicsgroup.com/biodiversity-sustainable-energy-conference-2014/index.php>

**European Plant Science Federation Conference**

The Plant Biology Europe FESPB/EPSO Congress 2014, will take place on the 22nd of June 2014 in the Convention Centre Dublin.

The European Plant Science Organisation (EPSO) is an independent academic organisation currently representing 61 institutional members bringing together more than 204 research institutes, departments and universities from 29 countries in Europe and beyond. EPSO's mission is to improve the impact and visibility of plant science in Europe. EPSO's top priorities are to facilitate the understanding of plant science, to boost funding for basic research and to coordinate research activities at the national and European levels and beyond. The conference will cover a wide range of areas such as plant biology, plant invasions and impacts, plant-pathogen interactions, bioenergy, food security or land use and greenhouse gases.

The preliminary programme and the call for papers can be found in: <http://euoplantbiology.org/programme/>

**TCD Botany-Zoology Postgraduate Symposium**

The Symposium will take place in Trinity College Dublin, on 20th and 21st of February 2014. During the symposium, postgraduate students and two invited speakers will give talks covering diverse topics, including: evolution, community ecology, behavioral ecology, conservation biology and developmental biology. This symposium is open to the entire college community. More details will follow.

**Summer Internships**

Sharon Matthews was awarded a research scholarship by the Wellcome Trust to undertake a research project looking at the effect of toxins in *Rhododendron ponticum* bee populations, under the supervision of Dr Jane Stout and Erin Jo Tiedeken of the TCBR. Sharon worked with live bees and ran an experiment that analysed bee biology. She considered the scholarship to be an invaluable and enjoyable experience.





## RECENT PUBLICATIONS

## Journal Articles

**Bourke D, Stanley D, O'Rourke E, Thompson R, Carnus T, Dauber J, Emmerson M, Whelan P, Hecq F, Fynn E, Dolan L, Stout JC** (In press). Response of farmland biodiversity to the introduction of bioenergy crops: effects of local factors and surrounding landscape context. *Global Change Biology Bioenergy*.

Chaisongkrama W, Chantaranonthai P, **Hodkinson TR** (2013). A taxonomic revision of the genus *Eragrostis* (*Poaceae*) in Thailand, *ScienceAsia*, 39: 111-123.

Christin PA, Osborne CP, Chatelet DS, Columbus JT, Besnard G, **Hodkinson TR**, Garrison LM, Vorontsova MS, Edwards EJ (2013), Anatomical enablers and the evolution of C4 photosynthesis in grasses, *Proceedings of the National Academy of Sciences USA*, 110: 1381-1386

**Coote, L**, Dietzsch, AC, Wilson, MW, Graham, CT, Fuller, L, Walsh, AT, Irwin, S, **Kelly, DL, Mitchell, FJG**, Kelly, TC, O'Halloran, J (2013). Testing indicators of biodiversity for plantation forests. *Ecological Indicators*, 32, 107-115.

Edwards CJ, Ho SYW, Barnett R, **Coxon P**, Bradley DG, Lord TC, O'Connor T (In press). Continuity of brown bear maternal lineages in northern England through the Last-glacial period. *Quaternary Science Reviews*, doi.org/10.1016/j.quascirev.2013.10.015.

**Egan PA** and van der Kooy, F (2013). Phytochemistry of the carnivorous Sundew genus *Drosera* (*Droseraceae*) – future perspectives and ethnopharmacological relevance. *Chemistry & Biodiversity*, 10: 1774-1790.

**González A**, Hochstrasser T, Fry J, Scott P, Grist B, **Jones M**, T O'Mahony T (In press). Evaluating Ireland's IBIA as an approach to improving the quality and effectiveness of biodiversity impact assessment. *Journal of Environmental Management*, 131: 150-160.

**González A**, Keneghan D, Fry J, Hochstrasser T (In press). Current practice in biodiversity impact assessment and prospects for developing an integrated process. *Impact Assessment and Project Appraisal*, <http://dx.doi.org/10.1080/14615517.2013.850839>.

**Hodkinson TR**, de Cesare M, Barth S (2013). Nuclear SSR Markers for *Miscanthus*, *Saccharum*, and Related Grasses (*Saccharinae*, *Poaceae*). *Applications in Plant Sciences*, 1(11) 2013.

**Mitchell, FJG** (2013). The arrival of the first forests. In: Jebb,

M, Crowley, C (eds.) *Secrets of the Irish landscape*. Cork: Cork University Press, 57-65.

**Mitchell, FJG** (2013). Long-term changes and drivers of biodiversity in Atlantic oakwoods. *Forest Ecology and Management*, 307, 1-6.

**Murphy BR**, Doohan FM, **Hodkinson TR** (In press). Fungal endophytes of barley roots, *The Journal of Agricultural Science*.

**Perdereau AC**, Douglas GC, **Hodkinson TR**, Kelleher CT (2013). High levels of variation in *Salix lignocellulose* genes revealed using poplar genomic resources (2013), *Biotechnology for Biofuels*, 6: 1-15.

Perrin, PM, **Mitchell, FJG** (2013). Effects of shade on growth, biomass allocation and leaf morphology in European yew (*Taxus baccata* L.). *European Journal of Forest Research*, 132, 211-218.

Richards EL, Alexander LA, Snellgrove D, Thomas RJ, **Marples NM**, Cable J (In press). Variation in the expression of dietary conservatism within and between fish species. *Animal Behaviour*.

**Stanley DA**, Gunning D, **Stout JC** (In press). Pollinators and pollination of oilseed rape crops (*Brassica napus* L.) in Ireland: ecological and economic incentives for pollinator conservation. *Journal of Insect Conservation* <http://link.springer.com/article/10.1007/s10841-013-9599-z#>

Teerawatananon A, Sungkaew S, Boontia V, **Hodkinson TR** (2013). A taxonomic revision of Germainia (*Andropogoneae*: *Poaceae*) in Thailand. *Blumea*, 57: 221-228.

Teerawatananon A, Sungkaew S, Marod D, **Hodkinson TR** (In press). Studies in the recent new genus record *Pseudostachyum* (*Poaceae*: *Bambusoideae*) from Thailand: notes on its taxonomy, distribution and habitat. *Nordic Journal of Botany*.

Thomasset M, Fernández-Manjarrés JF, Douglas GC, Bertolino P, Frascaria-Lacoste N, **Hodkinson TR** (2013). Assignment testing reveals multiple introduced source populations including potential ash hybrids (*Fraxinus excelsior* × *F. angustifolia*) in Ireland. *European Journal of Forest Research*, 132: 195-209.

## Guidelines

**González A** (2013). Integrated biodiversity impact assessment: Streamlining AA, SEA and EIA - Practitioner's manual. Ireland: Environmental Protection Agency.

**FEATURED PUBLICATIONS**

**Effects of Energy Crops on Biodiversity and Ecosystem Services by Jane Stout**

Intensive agricultural practices can be responsible for the loss of farmland biodiversity, and have knock-on consequences for the delivery of ecosystem services which benefit humans. Recent research as part of the SIMBIOSYS project, led by Jane Stout in the TCBR, has quantified the effects of growing bioenergy crops on biodiversity and ecosystem services in Ireland.

*Miscanthus.*  
Courtesy of  
Jesko Zimmermann



PhD student, Jesko Zimmermann, working with Prof Mike Jones, showed that even just two years after planting Miscanthus (a fast growing perennial grass grown for biofuel), a significant amount of carbon was already sequestered into soils (published in *Global Change Biology Bioenergy*). Furthermore, contrary to expectation, planting Miscanthus did not lead to significant losses in existing soil organic carbon stocks (published in *European Journal of Soil Science*). Jesko's work also showed that within-crop patchiness of Miscanthus has a significant impact on payback time for initial investments by farmers and might reduce gross margins by about 35% (published in *Global Change Biology Bioenergy*).

*Bumble bee and Oilseed rape.*  
Courtesy of  
Jane Stout



Another PhD student, Dara Stanley, working with Jane Stout, investigated the effects of energy crops on pollinators and pollination and found that exclusion of pollinators from oilseed rape resulted in approximately 30% decrease in seed number and weight, equivalent to nearly €4 million per annum (published in *Journal of Insect Conservation*). Furthermore, Dara's work showed that a wide range of pollinating insects use bioenergy fields (published in *Journal of Applied Ecology*) and that bees from more than 800 bumblebee colonies are attracted to individual oilseed rape fields (published in *PLoS ONE*). These studies, together with

others by post-docs Jens Dauber and David Bourke who also worked on the SIMBIOSYS project, have substantially advanced understanding of the interactions between bioenergy crops and farmland biodiversity.

**Variation in the Expression of Dietary Conservatism within and between Fish Species by Nicola Marples**

Birds and fish play one of two strategies when foraging for food. Individuals may be 'adventurous consumers' (AC) and try eating any unknown prey they come across to see whether it is edible, or 'dietarily conservative' (DC) and avoid eating unknown foods and end up with a restricted diet. The co-existence of both these strategies is surprising, as it would be expected that one or the other would be most advantageous in a given habitat. Two possible explanations for the maintenance of DC foraging strategy have been put forward: a defence against toxic foods, such as poisonous insects in the habitat; or individuals specialising on finding and eating a few food types becoming particularly good at detecting and handling them, so they may become more efficient at dealing with them than AC individuals.

These possible explanations have been investigated by comparing the frequency of DC individuals in tropical fish of four species, with a previous study of the frequency of DC in sticklebacks, which live in temperate climates. It was



hypothesised that tropical waters would have more toxic prey, as they have many more brightly coloured and defended animals than temperate waters. They also have a very high diversity of species, so specialisation on a few food types would be difficult. Therefore, if the first reason for the DC strategy, avoidance of toxicity, were true more DC individuals in tropical than temperate waters would be expected, but if DC specialisation were true, then fewer DC individuals would be expected. The study found that all four tropical fish species tested had very low frequencies of DC individuals, with only one out of ten tropical fish foraging in a DC manner. This contrasted with one in three sticklebacks in temperate waters. This study does not categorically prove that the DC specialisation explanation is the correct one but it supports that view, and also shows that the ecology in which the forager is living is important in deciding how it responds to novel foods and the foraging strategy it uses.

RESEARCH FOCUS

**Forests Buffer the Effects of Climate Change on Plants**

Collaborative international research involving Prof Daniel Kelly, Prof Fraser Mitchell and Miles Newman from the TCBR with researchers in Europe and the US scientists has shown that cool forest microclimates limit the effects of climate change on plants beneath the canopy. As a result, species that are better adapted to relatively warm temperatures are less dominant in these environments. More than 1400 vegetation surveys from European and North-American ancient deciduous forests were compiled. This revealed that ‘warm-adapted’ species, such as common ivy, have become considerably more common than they were 35 years ago, but under the forest canopy cooler temperatures are limiting their spread. It is thus recommended that forests should be preserved as safe refuges for cold-adapted plants that are struggling in a warmer world.



*Irish canopy cover. Courtesy of Fraser Mitchell.*

It is interesting to note that the Irish data contributed to this international investigation provide the strongest support for the overall conclusion that dense forest canopies damped the impact of global warming. This implies that the flora in Irish woodland is most vulnerable to the impacts of global warming if the tree canopy cover is not maintained. The principal threat to maintaining canopy cover is the inability of trees to generate due to high grazing pressure and this has been identified as a significant issue in woodland across the state.

This work was published in *Proceedings of the National Academy of Sciences*.

<http://www.tcd.ie/Communications/news/pressreleases/pressRelease.php?headerID=3366&pressReleaseArchive=2014>

**EU Science for Environment Policy Unit Draws on TCD Research**

Europe’s forests cover 45% of the land area, and provide important habitat for many endangered species. Plantation forests often have lower plant diversity than natural woodland, and are generally planted and managed to ensure a high yield of a single, or few species. However, in several EU Member States, they make up the majority of forest area, for example, 78% of Denmark’s forests are plantation. It is therefore important to maximise the potential of plantation habitats to support increased woodland plant diversity.

The FORESTBIO project led by Prof Daniel Kelly and Prof Fraser Mitchell compared plantations and semi-natural forests across Ireland, examining management practices and conditions in plantations that drive higher diversity and greater similarity to native plant communities. Linda Coote, Laura French and Karen Moore working on the project found that careful choice of tree species and sites could transform plantations into refuges for woodland plant diversity. Plantations of native species on or near historic woodland and those with adequate light levels below the tree canopy were found to support more plant species. These findings were published by Coote et al. in the leading forestry journal *Forest Ecology and Management* and were subsequently highlighted by the EU Science for Environment Policy Unit.



*Irish canopy cover. Courtesy of Fraser Mitchell.*

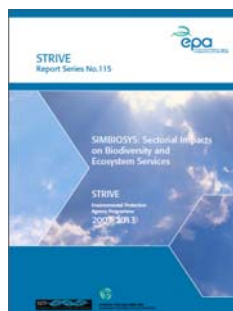
Coote, L, French, LJ, Moore, K, Mitchell, FJG and Kelly, DL (2012). Can forestry plantations support plant species and communities of semi-natural woodland? *Forest Ecology and Management*, 283, 86-95.



## RESEARCH FOCUS

**SIMBIOSYS Project Final Report Published**

The final synthesis report on work conducted as part of the 5-year EPA-funded SIMBIOSYS project is now available for download at: <http://www.epa.ie/pubs/reports/research/biodiversity/strive115simbiosys.html>.



Overall, researchers found differential impacts of sectoral activity on the taxa studied. Whilst some species benefited, others were not affected significantly, or were affected negatively, by the activities examined. For example, several bee species benefited from the floral resources provided by oilseed rape, grown for biodiesel, whilst some other flower-visiting insects, including many species of hoverfly, did not. Road landscaping treatments had few positive or negative impacts on plant, beetle or pollinating insect species.

The project also demonstrated that Pacific oysters have now formed some well-established feral populations on the Irish coast, and documented a range of impacts on native ecosystems. These included negative impacts on species and habitat types that are of national and international importance (e.g. the protected habitat-forming species, the honeycomb worm *Sabellaria alveolata*), and changes to a number of ecosystem processes. Additionally, the positive relationship between species richness and ecosystem functioning and the delivery of ecosystem services was confirmed. These relationships were apparent regardless of management type within a sector. Thus, management to promote species richness in particular taxa can have knock-on benefits in terms of the delivery of ecosystem services. For example, if the diversity of predatory ground beetles and pollinating insects in farmland increases, so does the potential for natural pest control and pollination services.

Finally, the project has identified some 'win-win' situations where both ecosystem health and socio-economic outputs can be maximised. For example, road-landscaping treatments that result in the greatest flowering-plant species richness also require the lowest inputs and are, therefore, more sustainable in the long term; using sterile triploid oysters in aquaculture can reduce the risk of invasion and adverse impacts on coastal ecosystems, and triploid individuals grow more quickly; improving *Miscanthus* crop yields has both an

economic benefit but also increases rates of carbon sequestration. These findings are crucial for a sustainable future.

Therefore, specific policy actions to enhance biodiversity are required to increase the delivery of ecosystem services – not just in protected areas, but in also in highly managed/exploited sites. In addition, the prevention of the introduction of non-native species or non-native varieties that have the potential to spread in the wild is recommended. Furthermore, environmental and socio-economic decision-making should be integrated with regards to biological resource management and biodiversity protection. Appropriate management can be specifically implemented to maximise the delivery of particular ecosystem services in any given context. Biodiversity and society can both benefit.

**New Fern Species Discovered in Honduras**

by *Sven Batke*

In 2012, during an epiphyte survey in Honduras, Sven Batke and Nicholas Hill discovered a fern species (*Serpocaulon lasiopus* (Klotzsch) A. R. Sm.), which was not previously known from Mesoamerica. *S. lasiopus* has only previously been recorded from South American countries including Venezuela, Ecuador, Peru and Bolivia, increasing the range of this species now to Mesoamerica. Two small populations were found on large >40 m tall rainforest trees in the Honduran mountain forest in the Sierra de Merendón. The range extension was submitted to the *American Fern Journal* and is currently in press.



*Sven Batke collecting S. lasiopus in Honduras.  
Courtesy of Nicholas Hill.*

RESEARCH FOCUS

**Malagasy silkworms: their ecology and importance in the life of local populations in Arivonimamo (Madagascar) by Florence Hecq**

The forests of tapia trees (*Uapacabojeri*) in Madagascar make a significant contribution to the local economy by providing a number of products, including silk harvested from an endemic silkworm: *Borocera* species (*Lasiocampidae*; *Lepidoptera*). The silk of *Borocera* plays an important part in Malagasy traditions and provides employment via the harvesting, spinning and weaving of silk. However, anthropogenic influences have seen the decline of both the tapia forests and *Borocera* species in recent years. This provided the incentive for a large inter-university project (GeVaBo) between Malagasy and Belgian Universities regarding the sustainable management of silk production in the forests of Arivonimamo, Madagascar.

Florence Hecq, a TCBR member from the Department of Botany, took part to this project in 2010 whilst doing her Masters in University of Liege, Gembloux Agro-Bio Tech (Belgium). She investigated another less well-known silk producing species of *Lepidoptera* (Family *Psychidae*) as a possible source of silk. Because of limited information and studies on *Psychidae*, her work began with the broader aim of improving the biological and ecological knowledge of *Psychidae* in the tapia forests keeping in mind its integration into the silk project. Two objectives were defined: (1) the evaluation of *Psychidae* population in Arivonimamo through an entomological inventory and (2) the determination of the role of *Psychidae* in the life of local population. The insect inventories conducted from February to May 2010 indicated that the number of *Psychidae* did not vary through the season and that they are more abundant than the *Borocera* sp. By applying, to *Psychidae* cocoons, the silk extraction method usually applied to *Borocera*, it was possible to obtain silk. However, the silk of *Psychidae* is no longer exploited by the local people.



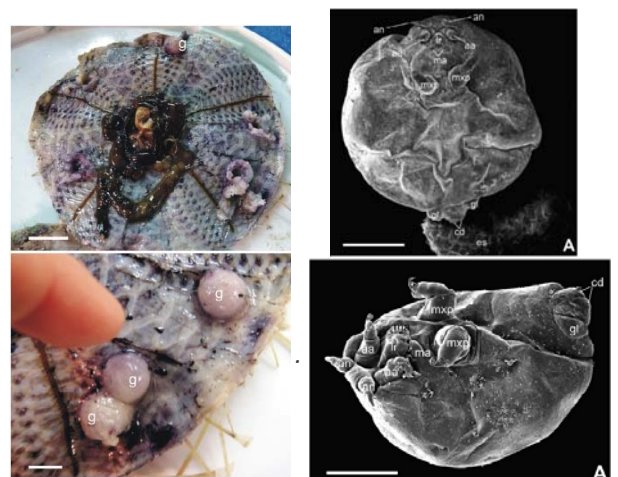
*Borocera cajani* larvae (left) and *Psychidae* larvae (right).  
Courtesy of Florence Hecq.

At the end of this 5 year project, a book entitled 'Les vers à soie malgaches (Malagasy silkworms)' focusing on various aspects as the biology and ecology of the Malagasy silkworms, the ecology of the silkworms habitat i.e. tapia forests and the silk sector in Madagascar, was published with the contributions of those who participated in this project in Madagascar and Belgium. The book includes a chapter by Florence on 'Silk moth of the *Psychidae* family: evaluation of their population and local knowledge about their silk, in Arivonimamo'.

Verheggen, F, Bogaert, J & Haubruge, E. (Eds.) (2013). Les vers à soie malgaches - Enjeux écologiques et socio-économiques. Gembloux, Belgique : Presses agronomiques de Gembloux.

**Sea Urchin Parasite Discovered**

In 2011, while exploring the Whittard Canyon system on the south end of the Irish continental margin, Roland Anton and Enrico Schwabe (Bavarian State Collection of Zoology), and Angela Stevenson (TCD), discovered an endoparasitic copepod living inside *Sperosoma grimaldii*, a deep-sea urchin. It's name, *Pionodesmotes domhainfharraigeanus* spec. nov., was derived from the Gaelic name for 'deep-sea' - domhainfharraige as it is the first endoparasite of it's genus ever recorded in Ireland and this taxa has only been recorded in the deep-sea (it was found at a depth of 2,000m). Interestingly, this type of endoparasite forms large galls inside sea urchins of the *echinothurid* family. These galls are completely unnoticeable from the outside of the sea urchins *echinoderma* and so it was only upon dissection of the sea urchin that the large female copepod and it's much smaller male counterpart were discovered, along with two egg sacs.



Copepod (left), female (top right) and male (bottom right).  
Courtesy of Angela Stevenson.



RESEARCH FOCUS

**Kenya - A Summary Through the Vegetation**  
by Erin Jo Tiedeken

The first week of November I travelled to Kenya to help out with the Tropical Field Ecology course. Final year students from Zoology, Environmental Sciences, and Plant Sciences attended, and I was the postgraduate representative from the Botany Department. I did my best to learn about the amazing tropical flora of this region and, therefore, decided to summarize the trip using the dominant or interesting plants we saw in each location we visited.

Days 1 and 2 - Nairobi: During our five hour drive north from the city, we saw colourful *Bougainvillea* and the beautiful flowering *Jacaranda* trees - neither of course native to the region.

Day 3 - OI Pejeta Conservancy, Laikipia County: For the next two days our campsite was on the river and surrounded by *Acacia xanthophloea*, known to the locals as “Yellow fever acacia” for its medicinal properties. It has a yellow-green bark which makes it quite distinctive. We also got our first glimpse of *Solanum incanum* but more on that later.



*Solanum incanum* at the Chimpanzee sanctuary in OI Pejeta (left) and *Adenium obesum*, Desert Rose at our campsite in Baringo, Robert’s Camp (right). Courtesy of Erin Jo Tiedeken.

Day 4 - Nakuru: Compared to OI Pejeta the flowering flora here was a breeze to identify! A lot of it consisted of invasive species like *Lantana* and *Datura* species, and of course the conspicuous *Solanum incanum* (also known as Sodom’s Apple) which gives the management at Nakuru serious trouble. In addition to the invasives, we saw a lot of *Leonotis mollissima* and identified a lovely shrub called *Tarchonanthus camphorates* from its camphor scented leaves.

Days 5-11-Baringo County: And finally, after quite a lot of driving (where we saw some impressive *Euphorbia*

*candelabra* specimens), we arrived in Baringo County. Our first day here we went for a hike at Lake Bogoria and spotted the indigenous *Adenium obesum*, or Desert Rose and *Salvadora persica*, known as the “toothbrush tree”. Our local guide told us people chew the twigs to promote dental hygiene. Throughout the county, two new species of *Acacia* were also evident - *Acacia tortilis* (The Umbrella Thorn, accurately named after its shape) and *Acacia mellifera*. Women in the area highly value *A. mellifera* because the honeybees they keep apparently favour it for making particularly sweet honey. And finally, invasive *Prosopis juliflora* was native to Mexico and Central America and introduced to try and control soil erosion.



Campsite at OI Pejeta, with *Acacia xanthophloea* in the background. Courtesy of Erin Jo Tiedeken.

This description is simply the most obvious vegetation we saw on the field course. The diversity of flora and fauna was overwhelming and I think the students, demonstrators, and staff alike were impressed and awed by the environments we were fortunate enough to experience. Kenya is truly an amazing place!

REQUESTS

Please send in information concerning current research, calls, news, publications and wildlife photos from field trips for inclusion in our next quarterly newsletter.

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