



Mountain Gorilla
Credit D Sheil

August 2014 Newsletter



The Darwin Initiative supports developing countries to conserve biodiversity and reduce poverty. The Darwin Initiative (funded by DEFRA, DFID and FCO), provides grants for projects working in developing countries and UK Overseas Territories (OTs).

Projects support:

- the Convention on Biological Diversity (CBD)
- the Nagoya Protocol on Access and Benefit-Sharing (ABS)
- the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
- the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)

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Contents

A word from the Darwin Initiative	Page 3
Newsletter contacts	Page 4
The Darwin Expert Committee - an insider's perspective	Page 5
Supporting positive change for the local people of Bwindi	Page 7
Building capacity for responsible tourism in Myanmar	Page 8
Strengthening the capability of Kenyan communities to conserve coral reefs	Page 9
Galapagos Marine Invasive Species: Prevention, Detection and Management	Page 10
Different perspectives on successful biodiversity-development mainstreaming	Page 11
New technology brings economic empowerment and sustainable resource extraction to the Northern Western Ghats	Page 12
Plant and arthropod diversity in forest/agroforest land-use mosaics in Guatemala	Page 13
Sustaining lives in the face of changing climate among pastoralist community in Boni-Dodori, Kenya	Page 14
Darwin Fellow Karina Vizcaino: Looking for the connectivity in the Bosque La Primavera	Page 16
Darwin Fellow Phetlasy Souladeth: Taxonomic revision of <i>Eriocaulon</i> in Cambodia, Laos and Vietnam	Page 17



Eastern cattle egret Credit T Aung

A word from the Darwin Initiative

Welcome to this edition of the Darwin Newsletter.

We asked for articles to focus on islands since this year is the International Year of Small Island Developing States. With the Convention on Biological Diversity's COP 12 coming up in the Republic of Korea in October we wanted to be able to showcase the excellent work being undertaken with Darwin funding in small island states.

Due to the excellent response to the request for articles we've split our usual newsletter into 2 – a UK Overseas Territories edition and the rest of the world in a separate edition.

Main Project Applications

The closing date for Main Project funding was the 3rd July. Yet again the number of applications we have received has increased therefore our Committee is hard at work reviewing all these applications. We expect to be announcing who is through to Stage 2 by mid-October.

For those that are invited to Stage 2, there will be a workshop in London in November to help you develop your application further. We will pay particular attention to those applying for DFID funding to ensure applicants have robust M&E in place to capture the benefits intended by the project.

Darwin Fellows

We have 2 articles in this edition from Darwin Fellows – Phetlasy who is spending a year at the Royal Botanic Gardens Edinburgh broadening her taxonomic knowledge and Karina who is spending a year expanding her GIS knowledge at the University of Leeds.

Darwin Fellowships provide funding for promising individuals from developing countries to come to the UK for up to a year for training or research. These Fellowships have been instrumental in boosting the careers of already promising individuals. We will be accepting applications for Darwin Fellowship funding in **September**. Please keep an eye on the Darwin website for more details.

Scoping Awards

We also expect to be accepting applications for Scoping Awards in September. There is one significant change to Scoping Awards this year. We will only be accepting applications from institutions that have not received Darwin funding in the last two rounds (2012 and 2013).

For more information on Darwin funding please [click here](#).



Silver shark at Egmont atoll. Credit J Turner

Newsletter contacts

The Darwin Initiative Secretariat (Defra)

To contact us:

The Darwin Secretariat is based in Defra and includes Clare Hamilton, Sally Cunningham and Huw Joynson.

If you have any general queries about how the Darwin Initiative operates please e-mail us at

darwin@defra.gsi.gov.uk

For any queries on project applications or existing projects please contact our Darwin Administrators (LTS International) at

darwin-applications@ltsi.co.uk or darwin-projects@ltsi.co.uk

This newsletter is produced quarterly. To include an article on your project please contact us

Darwin-Newsletter@ltsi.co.uk

Publicity and referencing Darwin and Defra

We remind projects that if they are publicising their work then it is important that they make every effort to mention Darwin funding. This is important as it helps us to ensure the Darwin Initiative retains a high profile and helps us to secure continued Government funding.



The Darwin Expert Committee - An insider's perspective

Government Committees can have a rather stuffy image - formal, bowler hats, out of touch with the real world. However, that doesn't mean that they are all the same and it's good to have the chance now to tell you a bit about one that isn't like that at all.

Perhaps though I should begin by explaining how I came to be on the Committee myself. As head of the Darwin secretariat in Defra for six years until 2012, I advised Ministers on policy and finance issues relating to the Darwin Initiative, and also worked closely with the Darwin Expert Committee (DEC) Chairman to ensure that the Committee were aware of Ministerial priorities.

When I retired I was genuinely keen to play much more golf (which I have), and maybe learn to ride a unicycle (which I haven't yet), but I also thought that of all the things I'd done in Government, Darwin had probably been the most enjoyable and the most worthwhile. So I applied and duly became one of the external Committee members.

There are currently 18 on the Committee. Appointments are for three years, and are often renewed for a further three but seldom beyond that - in order to keep bringing on fresh talent and skills.

It's a prestigious committee. Although it's unpaid, and the workload is substantial, there has never been any problem in securing high quality applicants.

The Committee doesn't have any role in terms of policy development. Its job is simply to assess the applications that are made each year. It is for Ministers to set the priorities for each round, and then for Defra to issue the call for applications. Only then do the Committee get involved.

It's a tough job. Funds are limited, and it can be very hard to judge whether to fund a plant project in Kenya rather than a wetlands project in Bangladesh. But however tempted we might be to fund something a bit different, we have to make sure that the ultimate decision is based solely on the quality of the applications before us.

So that's who we are and what we do. Why do we do it? That's easy - because we all strongly believe that this is one of the best, most effective and valuable of all Government programmes.

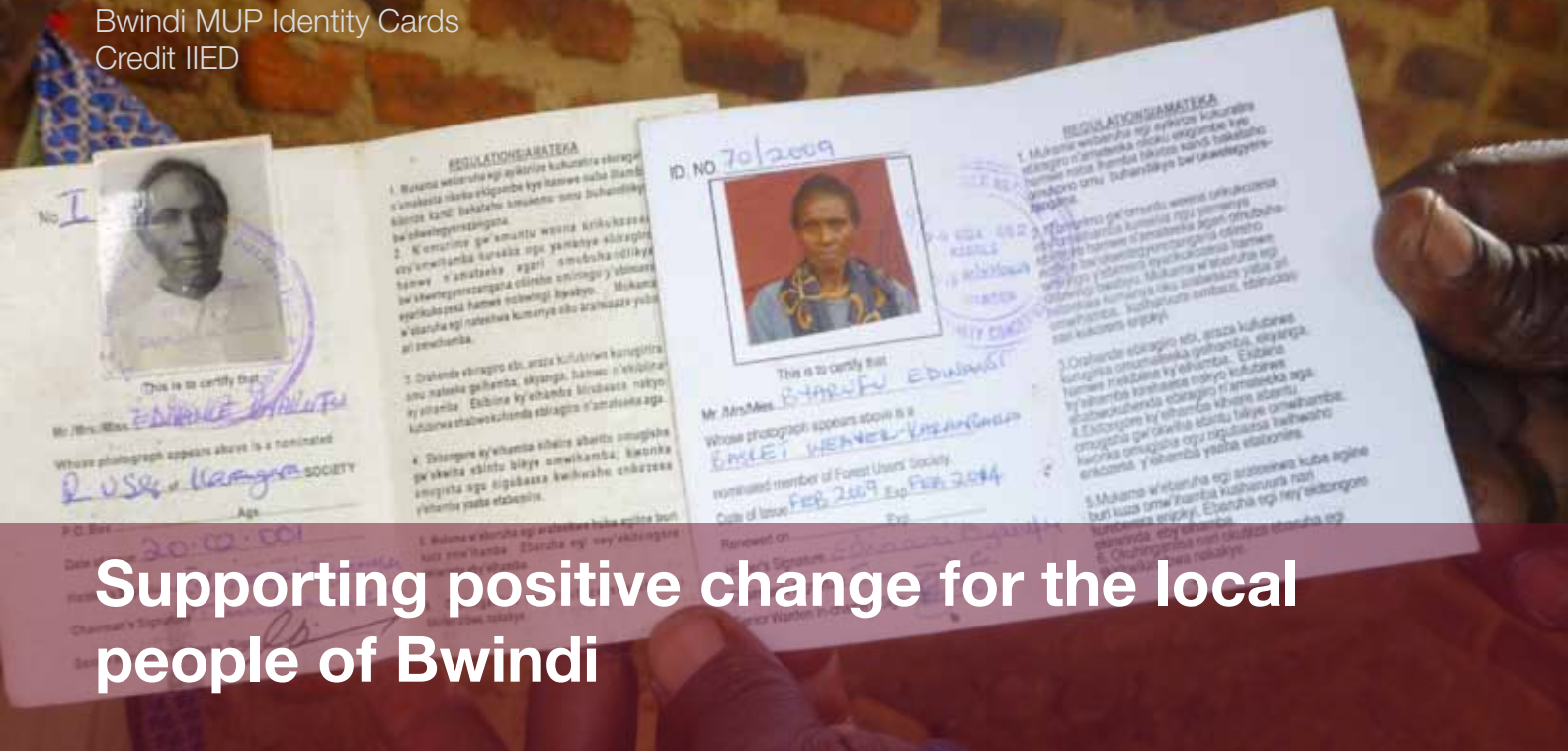
For evidence, look no further than these Darwin newsletters, which always have some fantastic examples of the wonderful work that's being done. No wonder that successive Ministers from different parties have described it as '*the jewel in the Department's crown*'.

Martin Brasher, Darwin Expert Committee Member



***Project news from the
rest of the world***

Burmese tit Credit T Aung



Supporting positive change for the local people of Bwindi

How can conservation research lead to positive change for local people? With much research decoupled from policy-making and on-the-ground practices, this question is as important as ever for the conservation community to contribute towards international efforts for sustainable development.

We sought to overcome this challenge by partnering with leading research, advocacy and conservation organisations in Uganda for our Darwin Initiative-funded ‘*Research to Policy: building capacity for conservation through poverty alleviation*’. We designed this project to make a direct link between research and the direction of subsequent pressures for policy reform. All project partners worked together to develop the research framework, hypotheses and questions, combining their knowledge and expertise in conservation and advocacy in Uganda. This process was supported by Imperial College London and focused on understanding efforts to link conservation with poverty alleviation at Bwindi Impenetrable National Park, in southwest Uganda.

Under Bwindi’s Multiple Use Programme (MUP), specialist harvesters from local communities can enter the national park to collect medicinal plants, basketry materials and honey. One aspect of our research sought to explore the governance of MUP, specifically who can and who cannot access these forest resources. Our research revealed elite capture: the poorest people were not granted access to forest resources although those with a leadership position or some authority in their community, and significantly less poor than other community members, were given access.

As a direct result of our research, the Uganda Wildlife Authority (UWA), the government agency responsible for Uganda’s national parks, immediately undertook a

full review of the registration process of the MUP. The outcome was the issue of new MUP Identity Cards for 226 local harvesters and, to mark the occasion, UWA Wardens of Bwindi held a ceremony that was attended by local government officials, local people and our research team.

The new MUP Identity Cards represent a significant step towards more equitable management of the national park, overcoming issues of elite capture so that the poorest people of Bwindi can collect forest resources. We are now developing an Access database to support the UWA Wardens of Bwindi with the logistical practicalities of managing and maintaining this resource access programme, given the number of local people involved and limited UWA staff for community conservation.

The debate about how research can inform policy and practice often highlights the need for researchers to translate technical scientific arguments into clear, tangible and useful knowledge that supports evidence-based decision making. This is important. But so too, as this project shows, is collaboration between international and local partners, and between researchers, conservationists and advocates. Our research has led to an immediate, positive change for the local people of Bwindi.

Now, as we progress to the final year of this project, support from the Darwin Initiative is providing capacity-building for the Uganda Conservation and Poverty Learning Group to convert all of the research findings into advocacy targets for improving conservation policy and practice in Uganda.

For more information [click here](#) or contact Dilys Roe dilys.roe@iied.org

Building capacity for responsible tourism in Myanmar

Dr Thein Aung is passionate about his country, its wildlife and its people. *“There is such potential in Myanmar for responsible tourism, sustainable tourism, ecotourism – call it what you will. In the north, we have the alpine forests of the eastern Himalayas. In the south, we have the tropical forests of Tanintharyi and the marine ecosystems of the Myeik archipelago. We have the Dry Zone and the vast Shan Plateau. We have over 1000 bird species and even more butterflies. Many of our habitats are still pristine and the diversity is there to be seen”.*

As Vice Chairman of the Myanmar Bird and Nature Society (MBNS), Dr Aung is one of Myanmar’s great communicators. He teaches in schools, advises the government, and works with international academics, spreading the conservation message.

The Darwin Initiative is providing a three year grant to the Harrison Institute to promote inclusive, equitable, and sustainable tourism in upper Ayeyarwady River Corridor. The Ayeyarwady River Corridor, listed as a conservation priority in the Myanmar Biodiversity Conservation Vision (2013), is home to rare and critically endangered species.

Tourist numbers in Myanmar are projected to increase from just over 1 million in 2012 to over 3 million by 2020, and the Union of Myanmar Tourism Association (UMTA) has selected the upper Ayeyarwady River Corridor as a priority for tourist expansion. The Darwin project includes a strong capacity building element, training eco-tourist guides in birding, wildlife watching, and environmental management. Thirty two young Myanmar trainees, men and women from many different backgrounds, are learning key skills to implement responsible tourism in Myanmar.

Dr Aung is extremely grateful to the Darwin Initiative for

understanding the importance of capacity building, – *“for giving us the tools to finish the job”*. As soon as the training programme was announced he was inundated with people wanting to join.

Lay Win, a freelance bird guide, is teaching some of the course. His parents own a small tea plantation at Namh San in Northern Shan State but he sees his career going in a different direction. *“Bird tour guiding is a good business. In the high season, it is possible for me to earn \$50 to \$150 a day”*. He thinks tourism is good for him, for the economy and for conservation. Lay has worked hard to learn his trade. In 2003 he read an article about Myanmar Bird and Nature Society, inspired and supported by two senior members of Myanmar Bird and Nature Society, he studied from books during the week and cycled to the forest on the weekends to learn about birds. Today, he is one of the few active bird guiders in the country.

The Darwin Initiative is making a huge difference to these young people of Myanmar. Thanks to the dedication of Dr Aung and MBNS volunteers, there are 32 new advocates being trained to spread the message that wildlife is a natural resource that if carefully and sympathetically managed will bring wealth to Myanmar and its people. These young people will play an important role in helping to conserve this natural heritage for present and future generations.

For more information [click here](#) or [here](#) or contact Paul Bates pjjbates2@hotmail.com

Strengthening the capability of Kenyan communities to conserve coral reefs

Coral reefs fringe the Kenyan coastline and are crucial to the economy and livelihood of coastal communities. These reefs not only provide food, coastal protection and other ecosystem services but they are also the home for numerous species of coral, reef fishes and endangered species including sea turtles. However, these important ecosystems are threatened due to overfishing, destructive extraction and the impacts of climate change.

To effectively and sustainably manage these ecosystems, local fisher communities must be involved in coordinated management strategies that provide joint benefits to the communities while reducing ecosystem stress. The main objective of this project is to build the capacity of local communities in fisheries co-management and conservation of coral reefs in Kenya.

The project comes at a critical time as the country is in the midst of a national governance devolution that has led to the transformation of fisheries management from top-down government control to a more collaborative management approach that includes local communities. New laws have been established, such as the Beach Management Unit regulations that empower local communities to manage their fishing grounds.

Funding provided by the Darwin Initiative will facilitate the Wildlife Conservation Society (WCS) to build the capacity of eight fisheries dependent communities situated in the southern part of the Kenyan coast that have established fisheries closures (locally called *tengefu*) in fringing reefs within their beach management units. The project arose from the fact that although *tengefu* have the potential to benefit communities and marine conservation by

addressing diverse values (community empowerment, fisheries protection, benefit sharing), previous studies by WCS and partners had shown that this potential was not being met. This was due to several challenges and limitations including the lack of resource management experience among community members, weak compliance and enforcement, and socioeconomic conditions that limit active participation in resource management.

In this three-year project, we will focus on addressing these challenges by building skills in adaptive co-management, promoting participatory processes, and using knowledge generated from monitoring ecological and social parameters to develop and implement management actions that take into account local realities. During the past year, we launched the project at a workshop and conducted participatory assessments and research to better understand the status and management skills of each *tengefu*. The findings were used to train and prepare these communities to more effectively participate and contribute to their adaptive management plans. By the end of the project period, we hope to have increased community stewardship of coastal ecosystems, improved coral reef ecosystem health and enhanced fishery-dependent livelihoods. The knowledge generated through this project will also contribute to the nascent national movements towards co-management of near-shore fisheries across east Africa.

For more information [click here](#) or contact Nyawira Muthiga nmuthiga@wcs.org

Practical training in underwater survey techniques on the beach before entering the water Credit I Keith



Galapagos Marine Invasive Species: Prevention, Detection and Management

The UK Darwin Initiative project '*Galapagos marine invasives*' has been running since April 2012 led by the Charles Darwin Foundation (CDF) and the University of Southampton. Other collaborators are the Galapagos National Park Service (GNPS), the Navy's Oceanographic Institute (INOCAR), National Direction of Aquatic Spaces (DIRNEA), Ecuadorian Agency for Quality Assurance (AGROCALIDAD) and University of Dundee.

The original Darwin-funded Galapagos Reserve Management Plan (1997-2000) established an extensive monitoring programme which is still running over 14 years later and has enabled this project to hit the ground running with a comprehensive knowledge base of what species are established and what are more recent changes and introductions.

The purpose of the current project is to establish a baseline for marine invasive species in the Galapagos archipelago, and implement preventative, detection, control and mitigation measures within the new government biosecurity framework and regional planning.

Capacity building in the local community is a crucial component of the project and includes: training local students in scientific methods and producing a thesis on marine invasive species topics; and for key local staff members of partner organisations to be trained in monitoring techniques for marine invasive species.

We are very fortunate to have recruited an Ecuadorian PhD

student, Inti Keith, a well-known and respected figure who has been working in the Galapagos for the past decade. The relatively modest project investment in her PhD will pay enormous dividends in the future.

The most amazing aspect of this project has been the wholehearted and enthusiastic adoption by the various government agencies. There are approximately 200,000 visitors each year to the Galapagos who are guided by a team of 500 Galapagos National Park naturalist guides. As part of this project all of these guides have received training on the marine invasives problem as well as over 100 staff from other government agencies.

For more information [click here](#) or contact Ken Collins kjc@noc.soton.ac.uk

Developing a 'business case' for biodiversity

Tips and tasks for influencing government and the private sector

Some of the publications produced under this project Credit IIED



Ten steps to biodiversity mainstreaming

Tips for NBSAPs 2.0 and beyond



BIODIVERSITY MAINSTREAMING

Integrating biodiversity, development and poverty reduction



Different perspectives on successful biodiversity-development mainstreaming

Successful mainstreaming of biodiversity and development means different things to different sectors — that was the realisation at the end of a three-day workshop for National Biodiversity Strategies and Actions Plans (NBSAP) Mainstreaming Biodiversity and Development project members near Windhoek, Namibia in July 2014.

The aim of this Darwin project is to mobilise and develop capacity so that NBSAP's in four pilot countries become more effective and more resilient policy instruments that both support national development objectives, and ensure priority is accorded to sustainable biodiversity management as a foundation of economic development. Working with Botswana, Namibia, Seychelles and Uganda – the project is engaging and encouraging leadership in biodiversity mainstreaming, and highlighting the experience of these four focal African countries to influence a whole new generation of NBSAP's.

At a recent workshop, participants undertook an exercise to consider success indicators from economic, social and environmental, perspectives highlighted interesting and varying remarks from group participants.

The finance group said mainstreaming success for them would be a smaller budget going to the environment ministry: *"That's not to say no budget for biodiversity conservation, but a budget dispersed across all ministries in government and possibly a different role for the environment ministry – more like a research and development unit"*.

Another working group examined social indicators of success. They highlighted tangible evidence that biodiversity contributed to wealth creation and more secure livelihoods at household levels and overall, and increased equity in sharing the benefits and costs of biodiversity conservation.

For the biodiversity group, success, among other things, was about other sectors coming spontaneously to the environment sector to seek advice, and public and private sectors including biodiversity conservation in their growth plans on their own initiative.


Different language and ways of working

Changing the usual way of working and even the language used to describe things was a reoccurring theme over the course of the workshop. One example came from the South African National Biodiversity Institute (SANBI).

In a project to combat pollution in the water supply critical to Durban, SANBI challenged the normal — and high cost — response to clean the water with chemicals once it was collected in a dam. They could see that investing in the 'ecological infrastructure' of the uMngeni catchment area for the dam would, in the long-term, made better economic and environmental sense. The first person SANBI staff spoke to was an engineer and not an environment specialist, and they adopted the term 'ecological infrastructure' because it was language that the engineer understood. Together with the local municipality SANBI discussed investing in restoration and better management of the catchment area for the dam and the wetlands around it. This highlights the importance of taking into account cultural, technical and sector specific considerations to more effectively mainstream biodiversity and development.

A 'Windhoek statement' which crystallises the workshop's conclusions will be posted online by IIED by the end of August at www.iied.org/nbsaps.

For more information click [here](#) or contact Steve Bass steve.bass@iied.org



Manual harvesting and de-stoning of Hirda by members of the Mahadev Koli tribe Credit I Bride

New technology brings economic empowerment and sustainable resource extraction to the Northern Western Ghats

Terminalia chebula (local name: Hirda) and *Terminalia bellerica* (local name: Beheda) are important tree species found in different areas within the Northern Western Ghats, with their fruits finding extensive use in the preparation of key Ayurvedic and Unani medicines. The collection and sale of Hirda fruits has been an age-old economic practice of the Mahadev Koli tribe living in the Bhimashankar Wildlife Sanctuary, while the potential of Beheda is still largely untapped in its main populations on the westerly slopes of Northern Western Ghats in Ratnagiri and Sindhudurg districts.

A major deterrent in the harvesting of Beheda fruits is the process of cracking and separating the tough usable flesh from the inner seed. Traditionally, people have done this manually, but this slow and tedious process has led local people to concentrate on harvesting tender immature Hirda fruit from the high branches of the tree whilst ignoring the economic value of the mature fruits which fall on the ground.

Manual harvesting and de-stoning of Hirda by members of the Mahadev Koli tribe

It was this crucial technological gap in the harvesting process of Hirda and Beheda that became one of the Applied Environmental Research Foundation's (AERF) community empowerment objectives.

Funded as part of the Darwin Initiative project, the Nutcracker machine is the culmination of need-based research and appropriate technological intervention targeted at resolving a bottleneck in the economic viability of Hirda and Beheda.

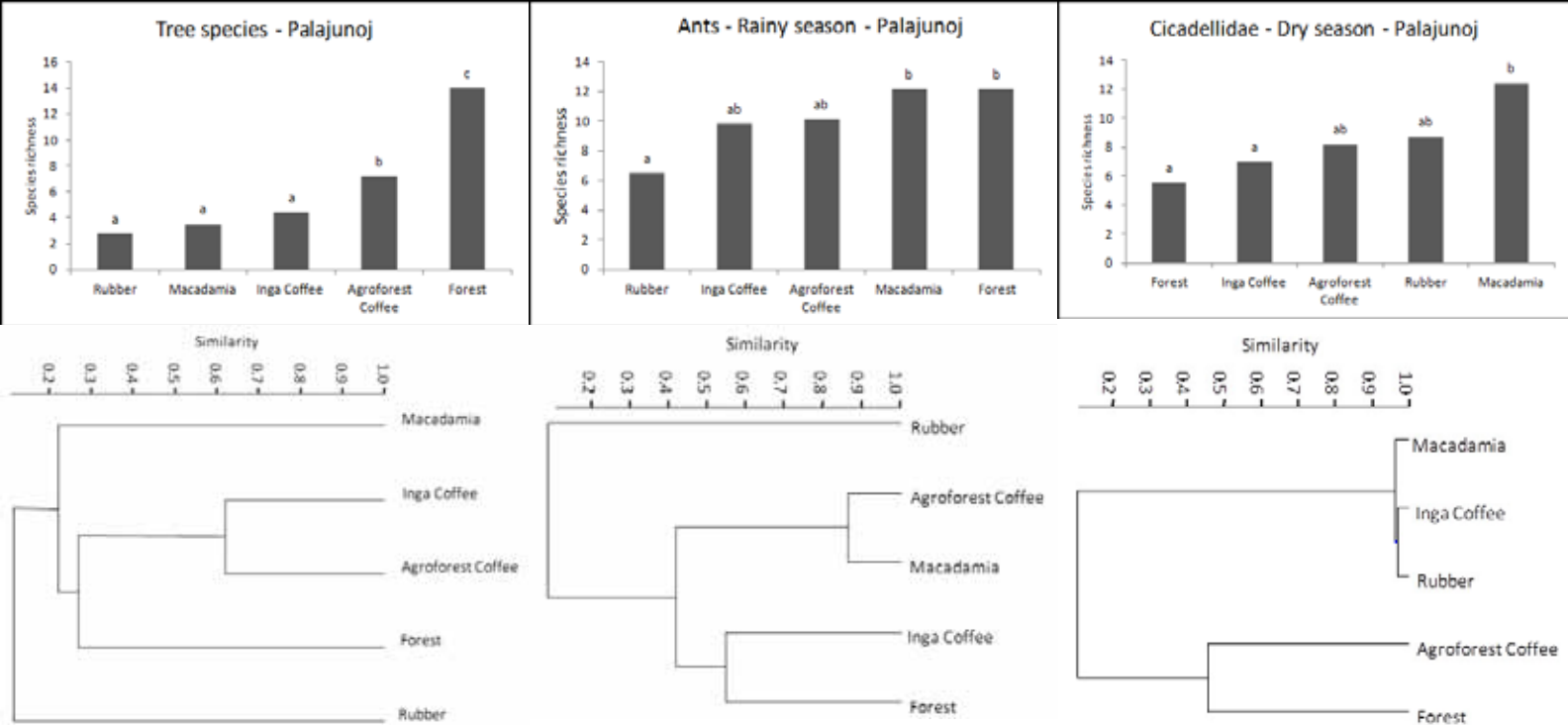
It mechanizes the process of cracking the tough outer flesh of the dried fruits, grades and separates, and thereby

makes hygienic, home-based primary processing both possible and viable for the first time. It is designed with a view to operating in often remote places, running on single-phase electricity, which means that every tiny hamlet with a domestic electricity supply can potentially have one. It also establishes an efficient supply chain for these valuable fruits in a manner that benefits the stakeholder at the grass-root level, promoting a sustainable trade and demoting the 'alternate' economic use of private forests as logging farms.

The first nutcracker machine was installed at Dhagewadi village in Bhimashankar Wildlife Sanctuary in June 2014. An enthusiastic group of Mahadev Koli tribesmen and women are now busy using it to produce their first ever sizable, hygienic and standardised batch of mature Hirda. They are being trained and prepared to achieve a FairWild certified product that will be purchased by the other main project partner, Pukka Herbs Ltd. UK. Another nutcracker machine is being introduced in the Ratnagiri districts further south for the harvesting of Beheda fruits.

This project stands as a landmark example of how appropriate technological intervention can boost sustainable harvesting of Non Forest Timber Products and forest conservation in India. With this technological innovation the Darwin project aims to make sustainable harvesting as efficient as possible and offer livelihood opportunities that may reduce rural-urban migration and help sustain village communities.

For more information [click here](#) or contact Douglas Macmillan d.c.macmillan@kent.ac.uk



Plant and arthropod diversity in forest/ agroforest land-use mosaics in Guatemala

As part of the Darwin project *Agroforests: a critical resource for sustaining megadiversity in Guatemala*, a poster was presented at the British Ecological Society Symposium on Conservation Ecology in June 2014. This was a joint poster by the University of Greenwich Natural Resources Institute, University of Valle, National Coffee Association, and the Foundation for Defence of Nature.

The aim of the Darwin project is to improve public and private policies that recognize the role of agroforests in meeting the objectives of the CBD in Guatemala. This article provides a summary of the poster presentation.

Shaded coffee or coffee agroforestry systems in Meso-America have been recognized for the potential to host biodiversity particularly migratory birds. Coffee agroforestry systems have also been promoted as a means to provide connectivity for biodiversity between forest fragments. Few comparative studies of biodiversity in coffee agroforests with forest or other competing land-uses have been conducted. We aim to combine biodiversity assessments of the main forest and agroforest land-uses with mapping across those land-uses to evaluate their relative contribution to increasing forest connectivity in highly fragmented landscapes.

Plant and arthropod (invertebrate animals) diversity was evaluated in the five main land-uses in two coffee-growing regions of Guatemala, and results are presented for Palajunoj on the Pacific Volcanic Chain. Samples were taken from across 17 farms. Trees, shrubs and herbs were inventoried in 2000m², 25m² and 1m² plots respectively.

Ants were collected from litter samples and *Cicadellidae* (leafhopper insects) were sampled by sweeping nets across the herbaceous layer. The main land-uses were mapped by remote sensing and verified through extensive ground-truthing enabling us to differentiate shaded coffee from forest. Analysis has now been started on forest fragmentation.

A total of 94 tree, 84 ant and 68 *Cicadellidae* species were distinguished. Tree species richness of the coffee agroforest was closest to forest, but its composition was distinct. Ant species richness of the Macadamia plantations was closest to forest, but composition of the Inga coffee plantations was more similar to forest. *Cicadellidae* species richness was lowest in the forest and agroforest coffee, and highest in land-uses with high herbaceous cover. Each group had a distinct response across the habitat types with ants favouring more forest-like conditions and *Cicadellidae* less forest-like.

In general rubber plantations were least-like forest in species richness and composition while coffee systems were intermediate. Our next stage is to determine the degree to which each land-use could reduce forest fragmentation given the biodiversity hosted.

For more information [click here](#) or contact Dr Jeremy Hagger J.P.Hagger@greenwich.ac.uk

Shortages of water means people travelling far distances to fetch water
Credit J Bett



Sustaining lives in the face of changing climate among pastoralist community in Boni-Dodori, Kenya

The Boni-Dodori ecosystem supports livelihoods, provides numerous ecosystem services such as carbon-fixing and maintains important ecological cycles. It also plays a huge role in the health of other nearby ecosystems such as marine environments.

Its unique biodiversity is characterized with remarkable levels of species richness and endemism and varied uses by local people as sources of medicinal plants, fuelwood, building materials, sources of water, pasture for livestock and wildlife, as well as food derived from the wild. This important area however has not been spared by climate-related hazards, posing challenges for local people, their livestock and wildlife.

The most affected area is north of Boni forest where the pastoralist community resides. The area's climate is changing fast as evidenced by increasing temperatures and drought frequency, as well as unpredictable rains that fall in shorter but more intense episodes.

This community have been changing and adapting their livelihoods to changing environmental conditions for years, however, the magnitude and rate of current climate change are making many traditional coping strategies ineffective and/or unsustainable, amplifying environmental degradation and food insecurity, forcing them to find new livelihoods strategies. Their ability to adapt however is constrained by many factors including increasing land degradation; conflicts over scarce resources, especially water and pasture; limited access to information (on weather, climate change, markets, as well as pest and disease outbreaks); limited education, skills and access to financial services and markets required to diversify their livelihoods; demographic pressures; and social and gender inequalities and marginalization, which reduce the voice and adaptive

capacity of the most vulnerable.

WWF, through the support of the Darwin Initiative is working with these communities to prepare for future climate change, demonstrating a strong motivation to move out of poverty and take their future into their own hands.


As part of a livelihoods improvement strategy, a number of strategies have been explored including: modifying livestock diversity (composition and numbers); diversifying livelihood activities; producing, collecting and preserving hay; modifying rangeland management practices; maintaining, rehabilitating and constructing water infrastructure; introduction of savings and credit facilities; establishing community groups to promote local engagement in a range of social and economic activities; making local natural resource management more effective, efficient and participatory; and raising community awareness on climate change issues, including future projections and potential adaptation strategies.

The Boni-Dodori communities are now working to protect and manage water bodies - a lifeline for their livestock and themselves. Their efforts include deploying guards during the night to guard against over-extraction of water resources. The project also aims to minimize forest degradation by discouraging shifting cultivation which is causing massive deforestation. We advocate for conservation agriculture and alternative biodiversity and conservation-based livelihoods (e.g., sustainable harvesting and sale of wild goods), remunerated conservation activities (e.g. community scouts) and nature-based tourism.

For more information [click here](#) or contact Kiunga Kareko kkareko@wwfkenya.org

News from our Darwin Fellows





Darwin Fellow Karina Aguilar Vizcaino: Looking for the connectivity in the Bosque La Primavera

Natural ecosystems are becoming increasingly fragmented by agriculture, urban development and supporting infrastructure such as roads. In developing countries experiencing rapid population and economic growth, this fragmentation is taking place at a particularly alarming rate. With forward-looking planning and a vision of a sustainable society however, it is possible to combine development with wildlife conservation. As part of my Darwin Fellowship I am working with the School of Geography, University of Leeds, to design biological corridors for the La Primavera forest biosphere reserve.

La Primavera is next to the City of Guadalajara, the second largest city in Mexico (after Mexico City). It has experienced rapid growth in the last decade and the needs of this enlarged population and changes in land use (mainly new housing, infrastructure and roads), has placed increasing pressure on the Bosque La Primavera, known as the “lungs of Guadalajara”. The 30,500ha area of La Primavera, which reaches elevations of over 2,000m, is a geologically diverse volcanic landscape with rivers, hot springs, forests of pine, oak, and hundreds of varieties of plants, fungi and algae. However it is becoming a shrinking island, surrounded by roads, industry, landfills and new urban developments.

In 2009, photo-trap cameras in La Primavera revealed a male puma (*Puma concolor*) in the protected area, the first record since its eradication from the area in 1974. Two years later, the wildlife team photographed a female puma, with two cubs – and their presence has since been re-confirmed on two separate occasions. Research indicates that at least at least 200,000ha are required to support

a family of cougars. La Primavera represents only one-seventh of the required area size, so it needs to remain connected to other forest areas in the region. With this aim, the first protected biological corridor was developed in the mountains of Ahuisculco with support from the NGO “Selva Negra”, and building on the Darwin Initiative project on payments for ecosystem services.

My fellowship has focused on applying scientific rigour to corridor design using geographical information systems based on the experience of the Wildlands Research Institute. I have been able to apply information gathered during visits to important natural areas of the U.K. We are also working with the ‘MapMe’ tool to include social participation in the decisions of conservation action in the corridor areas.

Local people as users of environmental services will benefit from this network of corridors in central Jalisco through increased forest biodiversity and the regulation of climate change. Environmentally responsible companies and NGO’s are being encouraged to collaborate and provide financial support, and it is hoped that local people will be offered employment opportunities to support the sustainable management of this important area.

For more information [click here](#) or contact Karina Aguilar Vizcaíno biolokav@hotmail.com

New species of *Eriocaulon*, which had been taken in Vientiane Capital, Lao PDR Credit P. Souladeth

Darwin Fellow Phetlasy Souladeth: Taxonomic revision of *Eriocaulon* in Cambodia, Laos and Vietnam

During an earlier (2004-2007) Darwin project ('Taxonomic training for a neglected biodiversity hotspot within Lao PDR') I received training in tropical botanical taxonomy.

Following this early support, I am excited to have been granted a Darwin Fellowship Award which provides funding to a UK host organisation to enable promising individuals from developing countries to come to the UK for training or research. I've been at the Royal Botanic Garden in Edinburgh for nine months now, where I'm learning valuable new skills which I can use back in Lao PDR. In my country little is known about plant diversity, and this lack of knowledge and trained people is hampering the development and implementation of conservation and sustainable use strategies.

Before I left Laos for Edinburgh, I conducted expeditions to several provinces of central and southern Laos, making more than 300 collections. At that time, 27 species were thought to occur in my study area but as a result of my studies, this has risen to 40 taxa, 4 of them endemic to the region (*Eriocaulon boni*, *E. bassacense*, *E. bromelioideum*, *E. eberhardtii*). Ten taxa are newly recorded for Cambodia, Laos and Vietnam.

Plant diversity in Cambodia, Laos and Vietnam is poorly known, especially for wetland plants like *Eriocaulon* which have little use to human society but there are several reasons for choosing to work on this plant group.

Firstly, it has been revised for the Flora of Thailand (FoT) by A. Meesawat, my MSc supervisor. She found 35 species (eight of them new to science) in Thailand, many of which may also occur in Cambodia, Laos and Vietnam. Secondly, I undertook preliminary scoping work with Meesawat in Vientiane Capital (Laos) in 2010. We added five new records for Laos in a very short time. I am curious therefore to know the diversity of *Eriocaulon* across the region.

Thirdly, my taxonomic skills are transferrable to any other plant group, and I hope to work on other other plants in future.

The work I'm doing as a Darwin Fellow also works towards targets of the Global Strategy for Plant Conservation (GSPC). This includes an online identification system for CLV *Eriocaulon* species (target 1), IUCN conservation assessment (target 2), records of the number of species which occur in conserved areas (target 7), increase the number of trained people in Lao PDR towards the number needed in order to achieve the GSPC targets (target 15), and strengthen national institutional capacity to conserve plants to achieve the GSPC targets (target 16).

In the spirit of the Darwin Initiative, I have been working with an expert on plant taxonomy and studying all herbarium materials at the Royal Botanic Garden Edinburgh. Soon after I arrived in the UK, I also spent a week studying all the specimens at the Royal Botanic Gardens Kew and discussing species concepts with an expert in *Eriocaulaceae*. Additionally, I was successful in applying for funds to visit the Muséum National d'Histoire Naturelle in Paris for a month where the highest numbers of specimens from Cambodia, Vietnam and Laos are deposited.

For the remainder of the project, I will construct an interactive key to the species, which will be available through the internet, and publish a taxonomic revision of *Eriocaulon* in Cambodia, Laos and Vietnam.

I look forward to using the techniques I've learned in Edinburgh when I return to my job in the National University of Laos at the end of October.

For more information [click here](#) or contact Mrs Phetlasy Souladeth phetlasy85@hotmail.com