Coffee cherries out to dry in the Ethiopian sun, Credit: Indrias Getachew

May 2016 Newsletter

The Darwin Initiative supports developing countries to conserve biodiversity and reduce poverty. Funded by the UK Government, the Darwin Initiative 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 Fauna and Flora (CITES)**

darwininitiative.org.uk

@Darwin_Defra

Facebook page

Darwin blog

Department for Environment Food & Rural Affairs

UKaid from the British people

DARWIN INITIATIVE

The Red Sea Hills behind Dungonab Bay, Sudan, Credit: Rebecca Klaus

Contents

Prayer flags in Nepal,
Credit - David Thomas

Publicity and Information About the Darwin Initiative

For more information on the Darwin Initiative please visit:

www.gov.uk/government/groups/the-darwininitiative

For further details about current and completed Darwin Initiative projects, including their reports and application forms, please visit:

www.darwininitiative.org.uk

We've recently launched a Darwin blog. This includes news and thoughts on issues being tackled by the Darwin Initiative - both at the project and programme level. We're also keen to share other Darwin project blogs. You can read it here:

https://darwininitiativeuk.wordpress.com/

Publicity and referencing Darwin Initiative

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

Department for Environment Food & Rural Affairs

UKaid from the British people

DARWIN INITIATIVE

22 MAY 2016
INTERNATIONAL DAY
FOR BIOLOGICAL DIVERSITY
Mainstreaming Biodiversity;
Sustaining People and their Livelihoods

A Word from Darwin

Since the last newsletter in February a lot has happened in the world of Darwin.

New funding rounds for **Darwin Main Projects, Fellowships and Scoping awards** and **Darwin Plus projects** have been completed. We look forward to hearing from these new projects in future editions of the newsletter!

In April, we held a two-day new projects workshop hosted at ZSL in London to introduce New Projects to Darwin systems, and to encourage lesson learning with existing projects. Thanks to everyone who helped to make this such a successful event.

This edition of the newsletter ties with the International Day for Biological Diversity on 22nd May. The theme for this year is "Mainstreaming Biodiversity; Sustaining People and their Livelihoods". Many of the articles in this newsletter describe how Darwin projects tie in with this theme - from improving local livelihoods in Ethiopia whilst protecting wild coffee diversity, to tracking bushmeat hunting in Cameroon during the West Africa Ebola crisis.

As always, keep in touch on Facebook and Twitter, and enjoy this latest edition of the Darwin newsletter!

Bryum pseudotriquestrum moss, Credit: Falklands Conservation

Mainstreaming Biodiversity; Sustaining People and their Livelihoods

Department for Environment Food & Rural Affairs

UKaid from the British people

DARWIN INITIATIVE

5

IIED - Mainstreaming biodiversity in development policy and planning

What exactly does 'mainstreaming' mean? Outside the development sector no one would use the word and yet we talk about mainstreaming climate finance, mainstreaming natural capital accounting and mainstreaming biodiversity.

When this was discussed recently in Harare at a workshop with all the project members of the 'Mainstreaming Biodiversity into Development Policy and Planning' initiative, we realised that a lot about the mainstreaming process was to do with communications. Communicating in person or in writing with policymakers; making the case for why budget holders should consider biodiversity concerns and why biodiversity people should be aware of development priorities.

We also recognised that the media had a useful part to play in this — provided we made it clear what we meant by biodiversity and tried not to use the term 'mainstreaming'.

We already had some experience in the project group of working with the media to communicate what biodiversity was and why it was a crucial part of many people's livelihoods that needed to be looked after. Dr Chip Chirara from the Zimbabwe National Biodiversity Strategy and Action Plan (NBSAP) revision team had run a successful programme with print and radio journalists that resulted in **richer reporting on biodiversity issues**.

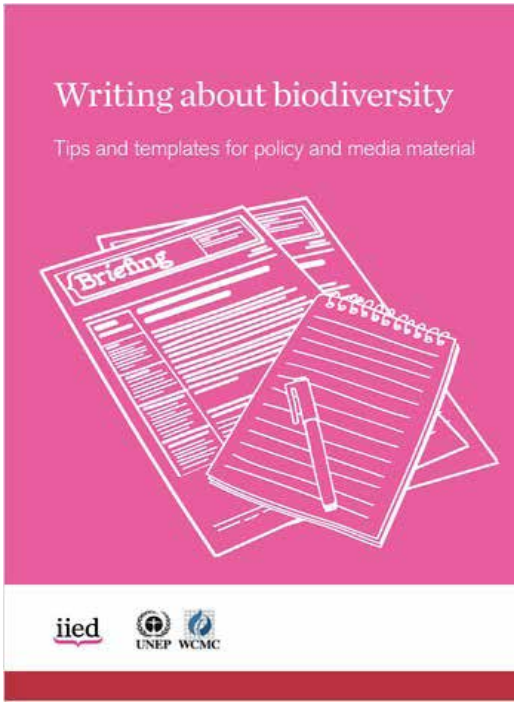
What seemed to be a gap among most of the participants from the eight African countries – Zambia, Botswana, Seychelles, Uganda, Zimbabwe, Namibia, Malawi and Ghana – was experience of writing in a short and accessible style for policymakers, and knowing how to provide journalists with written material that they could easily use.

The result was a request to add to the **range of tools produced in the first phase of the project** (from 2012-2015) by writing a practical booklet containing tips and templates for writing about biodiversity for these two audiences. The idea was to provide guidance that might make it more likely that case study evidence and reports about the benefits of biodiversity to development and the potential impact of development plans on biodiversity would be read and remembered.

Writing about biodiversity: tips and templates for policy and media materials is 20 pages of general tips on good writing and more specific hints about writing effectively for policymakers and the media. It's based on tried and tested techniques.

Email **rosalind.goodrich@iied.org** if you would like a hard copy, otherwise it can be downloaded from the IIED website.

More information can be found at: **www.iied.org/nbsaps**



Sewing up a sack of processed coffee, Credit: Indrias Getachew

Making the forest pay: protecting wild coffee biodiversity whilst improving local livelihoods

If biodiversity is to be nurtured and protected, its value must be recognised and reflected in the everyday decisions and actions taken by people at all levels, from government officials to local communities.

In the highlands of southwest Ethiopia the Wild Coffee Conservation Project (WCC) uses a Participatory Forest Management (PFM) approach to: empower communities to own and manage the forest for their benefit and; to protect and maintain the globally important wild coffee genetic resources found here.

Prior to the introduction of PFM the forest was managed by a government-led, top down approach, effectively an 'open access' situation in which the forest was subject to conversion to farmland by local communities and investors. Says Dachu Zeetu, Chair of the newly formed Forest Management Association "the main reason [for deforestation]... the community did not have a sense of ownership, there was no sense of passing on the resource to the next generation. Great harm was caused by only looking at the daily [immediate] benefit to be gained."

With the introduction of the PFM approach by the WCC project six years ago, deforestation rates in project communities have fallen. Deforestation in non-project areas is taking place at a rate of 2.59% per annum; in project areas this has reduced to 0.18%. In project areas, biodiversity analysis of the natural forest also shows signs of healthy vegetation regeneration. This is good news for forest biodiversity and the wild coffee stands that dwell there; it is also good news for local people.

Alongside responsibility for sustainable forest management and for patrolling and protecting the forest covered by their PFM Agreement, local people have the right to access commercial non-timber forest products such as coffee, honey and spices. The WCC project has supported the establishment of three forest product co-operatives, helped to develop national and international market links and provided training to improve product quality and processing. As a result, wild coffee collected from the forest has been sold for the highest price ever for sun-dried coffee in Ethiopia - three times the average non-wild price - and has been bought by a UK importer, positively impacting on people's livelihoods.

By 'making the forest pay' local people are motivated to sustainably manage and protect the forest. Dachu again: "From a community that considered expanding farm size as the only way to get wealth, now, with the help of expert studies, they are seeing the benefits of producing quality products and preserving the forest – and that's the direction of the work that we are following".

To access a short film about the WCC project and hear from Dachu in person: **Wild Coffee - Saving Southwest Ethiopia's Mountain Rainforest WCC-PFM Project - YouTube**

For more information on project 19-025, click **here** or visit http://wetlandsandforests.hud.ac.uk/ or contact Fiona Hesselden, **F.Hesselden@hud.ac.uk**

Participatory exercises, Credit: Wilfried Anagonou, Bioversity International

Mutually supportive implementation of the Plant Treaty and the Nagoya Protocol

This project seeks to empower local communities, plant breeders and researchers in Benin and Madagascar to access and use genetic resources and associated traditional knowledge, and share benefits associated with that use.

Farmers have traditionally conserved and shared planting materials. In fact, significant crop genetic diversity continues to be maintained in farmers' fields in the form of traditional plant varieties. Maintenance of these traditional varieties is, however, largely undertaken by poor, small-scale farmers, and it is often associated with poverty. In these areas, diversity of traditional crop varieties is one of the few options that farmers have to meet their livelihood needs. Over time, as climates increasingly change, farmers will need to exploit their local diversity for adapted traits, and increasingly access diversity from further afield (e.g. national and international gene banks, other farming communities, national and international crop improvement programs). National plant breeders will also be increasingly reliant on gene-based traits from materials accessed from other countries and continents as a result of climate change.

The Nagoya Protocol (NP) and The International Treaty on Plant Genetic Resources (ITPGRFA) create Access and Benefit Sharing (ABS) norms to address these situations. These standards ensure the politico-legal recognition of biodiversity stewards and their rights to benefit from others' use of their biological resources/traditional knowledge, compensate their conservation efforts, and increase their asset base through access to resources and know-how. It also provides a basis for international exchange of germplasm and information for formal sector breeders, and researchers.

However, the NP and the ITPGRFA commit countries to different ABS systems: one, bilateral; the other, multilateral. Uncertainty about how to implement them together contributes to low levels of implementation of both. Benin and Madagascar have both ratified the ITPGRFA and NP but neither has mechanisms in place to implement these agreements separately or together in a mutually supportive manner. This project responds through a combination of research and capacity building to implement the Plant Treaty and Nagoya Protocol in ways that respond to local

realities, contributing to development benefits.

The project supports community level activities in both Madagascar and Benin. It is working to help these communities organise information about the biological diversity they manage, whilst developing community biodiversity management plans and ABS agreements. As part of the project, a training workshop on resilient seed systems and adaptation to climate change was organized for partners from both countries. As part of this workshop, a field visit to Tori-Bossito, one of the project sites, was organized. During the field visit, participants contributed to the identification of the diversity of maize in the community, assessed whether there were any varieties being used for climate change adaptation, and discussed desired traits. Lessons learned from these community level 'pilots' provide inputs to the national policy develop processes.

In the long term, it is expected that enhanced benefit-sharing achieved through this project will incentivise communities and public authorities to invest in the conservation of plant genetic resources. Ultimately, this will increase the availability of plant genetic diversity for climate change adaptation.

For more information on project 22-017, click **here** or contact Project Leader Michael Halewood, **m.halewood@cgiar.org**

Farm boys at FFS food spray trial plots, Credit: PAN

Using the Ecosystem Approach to demonstrate the benefits of agroecology

Agricultural intensification and expansion in developing countries is often accompanied by deforestation and widespread use of highly hazardous pesticides. Agroecological approaches to managing crops, such as Integrated Pest Management (IPM), reduce environmental damage, while increasing yields and incomes and empowering farmers. However scaling up successful pilots requires evidence of impact along with support from government policy and services, rural communities, and supply chains.

The smallholder fields in Arba Minch in the Ethiopian Rift Valley are mosaics of diverse crops and natural vegetation which need to be conserved while improving smallholder income. The Rift Valley forms part of a major migratory flyway, with over 400 migratory bird species recorded. Since 2013, PAN Ethiopia and PAN UK have supported participatory,

FFS participants examine young cotton seedlings for pests, Credit: PAN

season-long IPM Farmer Field Schools (FFS) for cotton farmers, experimenting with 'food sprays' to attract beneficial insects into the treated crop to prey on bollworm and other pests. Better understanding of the dynamic interactions between pests, beneficial organisms, plant and soil health leads to improvements in crop husbandry, yields and financial returns; while farmer empowerment via establishment of cooperatives has seen big improvements in the price obtained by farmers for their cotton.

'I stopped using pesticides in 2013 due to the damage to bees and livestock. The most useful things I have learned from IPM training is to identify 'friends' and 'enemies' [beneficial insects and pests]". Mrs Aregash Tola, Chano Mile village FFS and women's spinning group.

The Darwin Initiative project has capitalized on this experience, providing robust evidence of the full ecosystem benefits of IPM and the food spray technique and engaging multiple stakeholders in advocating for IPM uptake. It has contributed to a transformation of the Ethiopian conventional agriculture system, from a top-down production oriented approach to a more participatory and agroecological approach.

The Darwin elements of PAN's field programme contribute to a reduction in poverty in two ways. First, providing evidence to policy makers of IPM benefits, including through participatory 'ecosystem service walks' pioneered by the project, has strengthened commitment to IPM in a draft 'National Pest Management Support System for Ethiopia' and a new Ministry of Agriculture post on organic production. Rolling out these practices nationwide will increase the numbers of farmers benefitting from joint poverty alleviation and enhanced biodiversity via agroecology.

Secondly, the project has created additional momentum for conservation beyond the FFS beneficiaries by building local capacity for biodiversity monitoring (birds, vegetation, and aquatic invertebrates) and understanding of ecosystem services. Participation by Plant Health staff, students and teachers, managers and workers of large cotton farms, has given the local community tools to assess and value previously unrecognized services, and is already helping shift perceptions and behaviour.

"Bird watching and recording species really helps open the students' eyes and makes them admire nature. Birds are good indicators of environmental quality." Solomon Kuluberhan, teacher at Batu High School, Ziway town

For more information on project 20-018, click **here** or contact Project Leader Keith Tyrell, **keithtyrell@pan-uk.org**

Phulchoki, Nepal, Credit: David Thomas, BirdLife

Mainstreaming biodiversity and ecosystem services into community forestry management in Nepal

When it comes to integrating natural resource management, local governance and the development of sustainable livelihoods, Nepal's community forestry programme is regarded as one of the world's success stories. Nepal's National Biodiversity Strategy and Action Plan (NBSAP) recognises that as well as contributing to health, livelihoods and wellbeing, Nepal's 18,000 Community Forests have the potential to make a significant contribution to the conservation of biodiversity and ecosystem services. This Darwin Initiative project, implemented by BirdLife International in Partnership with Bird Conservation Nepal (BCN), Nepal's Department of Forests (DoF), the Federation of Community Forest Users, Nepal (FECOFUN), is supporting Nepal's government to realise their ambitions in the NBSAP.

The economic and social benefits that biodiversity & ecosystem services provide are vital for the well-being of many Nepalese – especially the rural poor. Our project is developing and piloting a process through which Community Forest User Groups (CFUGs) can maximise the biodiversity benefits of their community forests. Training, and the provision of tools and awareness-raising activities will ensure integration of biodiversity and ecosystem services into local-level forest management plans, the implementation of which will ensure community forests are managed sustainably, with biodiversity conservation as well as livelihoods benefits.

An in-depth review looking at how biodiversity and ecosystem services are currently addressed in the community forestry sector, has shown that managing forest biodiversity can help alleviate poverty in a number of ways. Effective forest management can preserve cultural values, create employment and incomes (e.g. through non-timber forest products, ecotourism), maintain water supplies, conserve traditional medicines, enhance equity, and empower women. This review is providing a crucial evidence base to support the project's mainstreaming aims.

A workshop in March 2016, hosted by the project and funded by the Darwin Initiative, brought together key government representatives, BCN (the BirdLife Partner in Nepal), FECOFUN and other stakeholders. Participants began to develop a stepwise process to support CFUGs to identify, assess, and prioritise the benefits and opportunities arising from the conservation of biodiversity and ecosystem services - and to integrate these biodiversity benefits into their community forest management plans. Based on these discussions, a formal 'biodiversity supplement' to Nepal's National Community Forest Management Guidelines will be designed to mainstream this process into the community forestry planning cycle.

Working with the Forest Training Institute and with FECOFUN, the project is also developing training materials so that local forest officers and other stakeholders are able to support CFUGs to successfully plan and implement better biodiversity and ecosystem services management.

Our mainstreaming approach, incorporating biodiversity tools and training into existing policy frameworks and government structures, will ensure our impact continues well beyond the scope of the project, benefitting people and biodiversity.

For more information on project 22-018, click **here** or contact Billy Fairburn, **billy.fairburn@birdlife.org**

Credit: Birdlife

Credit: David Thomas

General Darwin News

Department for Environment Food & Rural Affairs

UKaid from the British people

DARWIN INITIATIVE

13

Misbahou now, working at NGO Dahari

A personal account from a Darwin Fellow – Misbahou Mohamed

Misbahou was a Darwin Fellow between 2013-2014 and through his fellowship undertook applied training in conservation management during the Durrell DESMAN course. Below he talks about the skills he learned during his fellowship and how he is applying them now.

I am Misbahou Mohamed from the Comoros Islands. The Comoros suffer from a very high deforestation rate, especially the island of Anjouan where I live and work.

I was a Darwin fellow in 2014. Currently I am Strategy coordinator for the **NGO Dahari**. My main work is to support the communities around Moya's forest to manage their natural resources: water, trees and soil. The knowledge I acquired during my fellowship helped me a lot to attain better results.

With DESMAN, I learned several approaches and tools for conservation of biodiversity and management of natural resources. For example, I can facilitate meetings and communicate more easily with the community. I learnt more about GIS and statistics, specifically I learnt more about leadership, project management, and implementing an action plan to conserve endangered species.

The new skills from my fellowship in Madagascar and UK and the knowledge shared by Darwin and Durrell staff helped me to develop a sustainable approach to my work in natural resources in three villages in Comoros. The aim is to protect three watersheds by planting trees to stop erosion and protect water sources. Using my knowledge about action plans in conservation, I am managing the first project to conserve the endangered Livingstone's fruit bat in Anjouan by using payment for ecosystem services – you can learn a little bit more about Dahari's work with Livingstone's fruit bat in this video **https://www.youtube.com/watch?v=1UEaC5RBlkU**.

This fellowship was very beneficial for me because it allowed me to become one of the staff of Dahari with a high capacity in conservation and to tackle problems related to conservation of biodiversity and management of natural resources in the Comoros.

Women taking home fodder seedlings, Credit: SWR, NTN, CHN, ZSL

Securing Suklaphanta Wildlife Reserve's grasslands and wellbeing of local communities

Suklaphanta Wildlife Reserve, in the far-western lowland of Nepal, supports a hugely biodiverse ecosystem. The extensive grasslands of this protected area are home to many threatened species such as tiger, rhino, elephants, the country's largest herd of swamp deer, Bengal florican and many other iconic species. The local communities also depend on resources from this protected area for supporting their livelihoods. With population growth in the region and ever increasing demand for natural resources the pressure on this wildlife and their habitat is intensifying.

Livestock overgrazing inside the protected area is one of the main problems, resulting in loss of livestock though predation, increased risk of disease transmission and decreased productivity of grasslands. Zoological Society of London, supported by the Darwin Initiative, is working with the reserve authority, national conservation organisations and local communities to support sustainable livelihoods for buffer zone communities. The intervention aims to improve their wellbeing while improving the status of this fragile grassland ecosystem. This project is supporting farmers to raise productive breeds of cattle, improving access to veterinary services and encouraging improved grazing practices resulting in reduced grazing pressure on grasslands and reduced risks of disease transmission between wild ruminants and domestic animals.

Although livestock are commonly kept, they can be unproductive, and provide little benefit to owners whilst simultaneously being an economic burden when diseased. Under this project two veterinary centres have been established in communities where livestock are reared. The project supported these centres by putting necessary equipment and supplies in place and training veterinary technicians. They are now fully functional and help communities access veterinary care for their livestock more easily. Two women-led diary cooperatives have also been set up to provide financial support via soft loans for community members to purchase improved livestock breeds. The revolving fund of the cooperative provides partial support to purchase improved cows/buffaloes on low interest. The self-sustaining cooperatives are led by an executive committee of women.

Through this project ZSL are engaging communities for better management of grasslands and improved fodder access. The project has provided support for upgrading existing nurseries in the region and has already distributed 1,778 fodder seedlings to 90 households to promote fodder tree planting on private farms. The project is also working toward promoting stall feeding by raising awareness though regular broadcasts on local radio.

Finally, the project is also involved in supporting the monitoring of wildlife species of SWR. Project staff are working together with the Reserve authorities providing technical, financial and field work assistance for species monitoring. Grassland management experiment plots have been established to study the effect of different grassland management interventions over time. The first year of this project has been successfully completed and the project aims to achieve a lot more over the next two year.

For more information on project 22-009, click **here** or contact Project Leader Dr Hem Sagar Baral, **hem.baral@zsl.org**

World Heritage Workshop about Sudanese MPAs, Unesco Credit: The Cousteau Society

Marine protected areas of Sudan: bridging biodiversity conservation and poverty alleviation

When introducing our Darwin Initiative project, "Strengthening marine protected areas and marine ecotourism benefits in Sudan" the initial reaction is often one of bemusement: "Really? I didn't even know Sudan had a coastline?" This misconception of Sudan as a land-locked country sets the context for our project.

Sudan has a spectacular coast bordering the central Red Sea situated between Egypt in the north and Eritrea in the south. The coastal plains are flat, sparsely populated outside of the main city Port Sudan, and backed by the rugged Red Sea hills, which create a dramatic lunar landscape. Coral reefs plunge steeply from the mainland coast and numerous uninhabited islands sit offshore. These and a complexity of other submerged reef structures, collectively create a highly productive underwater seascape that supports a wealth and diversity of other marine life. In recognition of the importance of this marine heritage, the Government of Sudan declared two national parks: Sanganeb Atoll Marine National Park (SMNP), which was gazetted in 1990 and Dungonab Bay and Mukkawar Island National Park (DMNP), which was gazetted in 2004. These parks and the people that depend upon the resources they provide are the focus for our project.

The coastal residents of DMNP remain dependent upon small-scale reef-based fishing and agro-pastorialism, as there are few other viable income generating activities. However, reef-based fisheries like these can be vulnerable to over-exploitation. Even though fishing-effort remains relatively low, these fisheries are semi-commercial and stocks of certain commercially valuable species, such as groupers, are already showing signs of decline. Small-scale ecotourism linked to the dive sector might provide an alternative livelihood opportunity that could benefit communities in DMNP while also alleviating pressure on the fisheries resources.

To further explore the potential for sustainable tourism development, the project delivered training in March 2016. The course was attended by 24 participants, including representatives from the authority responsible for managing these areas, the Wildlife Conservation General Administration (WCGA) and other key authorities. The workshop focused upon the evolution of the tourism industry, the tools and practices employed in sustainable tourism development and the challenges faced in emerging and developing destinations.

The project has also been supporting the preparation of a new Management Plan for DMNP in partnership with PERSGA (The Regional Organisation for the Protection of the Red Sea and Gulf of Aden) for implementation by the WCGA. The livelihood activities and business plans developed through this project will be integrated for implementation over the next 5 years.

In parallel with the in-country work, the project has also been working towards increasing the

Coral Garden in the Dungonab Bay MPA, Credit: The Cousteau Society

international recognition of the marine parks of Sudan. The project has set up a website for the parks, and project staff attended a workshop organised by the Convention on Biological Diversity to support the submission of the parks as Ecologically and Biologically Sensitive Areas (EBSAs). Sudan has also recently organised a **workshop** and submitted a new joint proposal for the parks to be awarded the prestigious international status of a UNESCO Marine World Heritage Site which, if successful, would help put Sudan's marine parks on the map!

For more information on project 21-019, click **here** or contact Project Leader Tarik Chekchak, **t.chekchak@cousteau.org**

Participatory mapping of biodiversity sensitive areas in the MPA, Credit: Rebecca Klaus

Training of local NGO members on the identification of primate and gunshot sounds, Credit: WildCRU

Acoustic monitoring in African tropical protected areas: improving biodiversity and social outcomes

Wild meat ("bushmeat") offers an important source of protein, micronutrients, and income for rural communities in tropical forest regions. In Cameroon's Korup National Park, the contribution of bushmeat to the health and livelihoods of local people was tested when, in summer 2014, the West African outbreak of Ebola haemorrhagic fever reached neighbouring Nigeria. Nigerian authorities rapidly cracked down on the trade of bushmeat for several weeks in fear that it could be linked to the spread of the disease. Our network of acoustic sensors in Korup clearly showed a marked and significant decline of gun hunting pressure compared to the month before and the same period in 2013. Furthermore, our concurrent hunter surveys in surrounding villages corroborated this finding. There was no doubt – the market closures in Nigeria led to a rapid decline in hunting and bushmeat trading in Cameroon. While commercial hunting was trying to adjust to the new (albeit short lived) reality across the border, bushmeat consumption in our monitored households remained steady. People needed protein and the alternatives to bushmeat were either not readily available or could not fulfil the nutritional needs of these remote communities. The importance of subsistence hunting for food security at times of such international crises became apparent (and thanks to our Darwin project, we had the data to show it).

Our project's goal is to improve the design and efficacy of anti-poaching patrols in Afrotropical protected areas via the novel application of bioacoustics methods. It intends to safeguard therefore not only the biodiversity of these areas but – crucially – their role as important "sources" of wildlife populations that are legal to hunt in surrounding forest "sinks". Empowering park authorities to curtail intense and unsustainable poaching pressure inside the park directly defends the food security and therefore health and livelihoods of the rural poor. At the same time it promotes a more equitable sharing of benefits from wildlife.

Setting up one of the Autonomous Recording Units (ARUs) used to monitor gunshots, Credit: WildCRU

After two years of 24/7 monitoring of gun hunting at the heart of Korup forest via acoustic sensors – and a detection of ~4,000 gunshots, the park management has hunting data in hand that are robust, direct, verifiable and of unprecedented spatial and temporal resolution. For instance, 2/3 of the gunshots occur at night – a period when game guard patrols rarely happened. Each New Year period there is a dramatic 400-500% increase in gun hunting pressure according to the acoustic data, which is not reflected in the concurrent hunter surveys. Moreover, combining the acoustic data with the hunter survey data made it possible to estimate actual animal and biomass extraction rates within a given area (as opposed to estimates from bushmeat market surveys where the origin of animals is uncertain). The level of hunting even in the most patrolled areas is at or above sustainable harvest rates. Importantly, there is little evidence that current anti-poaching patrol intensity has a significant impact on curbing hunting pressure.

With such solid baseline data in hand, the authorities drastically redesigned the frequency, duration, and timing of patrols; by quantifying actual hunting pressure, anti-poaching patrols need not be designed blindly but can instead be adapted to changing hunting conditions. Already, acoustic sensors are used in a pilot phase in three protected areas in southwest Cameroon (Banyang-Mbo/Takamanda/Mt Cameroon) and we provided advice to the government on how best to increase the country's capacity to maintain such acoustic grids with development of regional acoustic data analysis hubs.

For more information on project 20-012, click **here** or contact Project Leader David Macdonald, **david.macdonald@zoo.ox.ac.uk**

Lifting ARU 8m into tree to increase the sensor's detection range of gunshots, Credit: WildCRU

Papyrus planting on the fringes of Lake Sare, Credit: Nature Kenya

Towards a Payment for Ecosystem Services scheme for habitat restoration in Yala Swamp

Yala swamp complex, located on the north-eastern shoreline of Lake Victoria, is the largest freshwater wetland in Kenya. It is well recognised both for its ecologic and economic significance. It offers refuge for the cichlid fish which with time have disappeared from Lake Victoria. The swamp is also an important habitat for a number of endemic wetland species, including the globally threatened Papyrus Yellow Warbler, and the nationally threatened semi-aquatic Sitatunga antelope. However, Yala swamp is also threatened by conversion for agriculture, leading to degradation, fragmentation and loss, disruption of water flow and over-exploitation of its natural resources. There is also unprecedented landscape degradation upstream leading to huge sediment load, floods when it rains and extremely low water levels during dry spells.

In an effort to create, restore, and protect wildlife habitat in and upstream from the delta, and provide benefits to farmers, Nature Kenya is working with stakeholders both at the county and national government levels to establish a Payment for Ecosystem Service (PES) scheme. The PES scheme entails: incentivising 200 farmers to plant bamboo and native riparian tree species; keeping living trees standing; installation and use of energy saving devices; and adoption of sustainable agricultural techniques through farmers' field schools.

To date, a total of 15 community based organisations (CBOs) have been trained in collaboration with the Kenya Forest Service to establish tree nurseries. Over 100,000 native tree seedlings, including bamboo, are to be planted over an area of 200ha along a 30m riparian zone of River Yala upstream of the delta. The upstream planting will protect the watershed zone, reduce harmful run-off into the river, conserve biodiversity, capture carbon dioxide (carbon sequestration) and yield fuel and construction materials. Further, critical habitats for biodiversity and ecosystem services within Yala swamp which are degraded have been identified for conservation and restoration. CBOs from both Siaya and Busia Counties are already engaged in planting papyrus in five priority areas within Yala swamp covering 300ha.

Nature Kenya is also working with county stakeholders to support the designation of 2,000ha of pristine papyrus stands as Community Conservation Areas (CCAs), develop guidelines on sustainable harvesting of papyrus and secure the water supply to Lake Kanyaboli in the east of the delta. Management committees comprising of the local communities and County governments will manage the CCAs for conservation and ecotourism. The management committees will develop binding agreements and outline land use restrictions that must be met in order for benefits to be received. Some of the proposed restrictions include no farming in critical habitat zones, no fishing in fish breeding zones, no poaching, no bird poisoning, no burning of papyrus, and no clear felling of papyrus for fuelwood/thatching/handicrafts among others. The successful implementation of the PES scheme will secure wildlife habitat and provide benefits directly to communities.

For more information on project 21-015, click **here** or contact Project Leader Serah Munguti, **advocacy@naturekenya.org**

Cruise ships in the Falkland Islands, Credit: N McNally

Initiating Marine Spatial Planning in the Falkland Islands to ensure sustainable management

The Falkland Islands are remote, wild, pristine and beautiful. The islands host breeding populations of seabirds of global significance, but are also locally important for the islanders and the tourism industry. The islands are surrounded by the Patagonian Shelf, a hotspot of marine wildlife that also supports the islands' commercial fisheries. The Darwin project 'Marine Spatial Planning (MSP) for the Falkland Islands' started in July 2014, led by the South Atlantic Environmental Research Institute (SAERI), and supported by the Falklands Islands Government (FIG). The project aimed to initiate the process of MSP for the islands by preparing data, tools and analyses, and to produce an MSP framework for FIG.

Marine mapping and stakeholder engagement have been two highlights of the project. Over 50 datasets were gathered and mapped, all of which are available in the MSP Geographic Information System (GIS) database; many layers can also now be visualised online with a new prototype webGIS (click **here**). These layers include human activities (e.g. boat traffic, anchoring), environmental variables (e.g. bathymetry, the depth of ocean floors), biological data (e.g. seabird colonies and their use of near-shore areas), and cultural values (e.g. recreational boating areas). All principal marine stakeholders have been involved in the project, via a project steering committee, workshops, public consultation or meetings.

Government and political support is key to ensuring the long-term sustainability of the MSP process. In December 2015, building on their commitment in the Falkland Islands Plan, the FIG Executive Council agreed to the production of an MSP Plan as part of a second (development) phase of MSP that will follow the initial Darwin project, which is now considered phase 1 (initiation) in the islands' MSP process.

Other project outputs include:

- New data sets: For the first time, the MSP project provided shipping data around the islands over one full year. Using the Automated Information System run by the local telecommunications company, the hourly locations of ships within the Falklands' Exclusive Economic Zone were stored and analysed. Despite the remoteness of the islands, shipping routes appeared, in particular on the western side of the islands, including large vessels transiting within 4 km of the islands. This enabled the MSP team to identify vulnerable areas at risk from shipping and boating activities. As part of the MSP, shipping exclusion zones will be proposed to reduce risks to the environment and human safety.

- Three successful stakeholder workshops - the last of which took place 5-7 April 2016 in Stanley - brought local stakeholders together with UK experts to have technical discussions on the future for the MSP. All stakeholders agreed that MSP will provide benefits to the islands, with an emphasis on having policies in place, recommending shipping management, and identifying the most ecologically important areas to ensure they are managed accordingly.

- Identifying and addressing data gaps: During the workshops and the data collection and mapping work, clear data gaps were identified. This led to the MSP team designing two complementary projects to address these gaps (completed during the length of the MSP project), and also to develop a new proposal

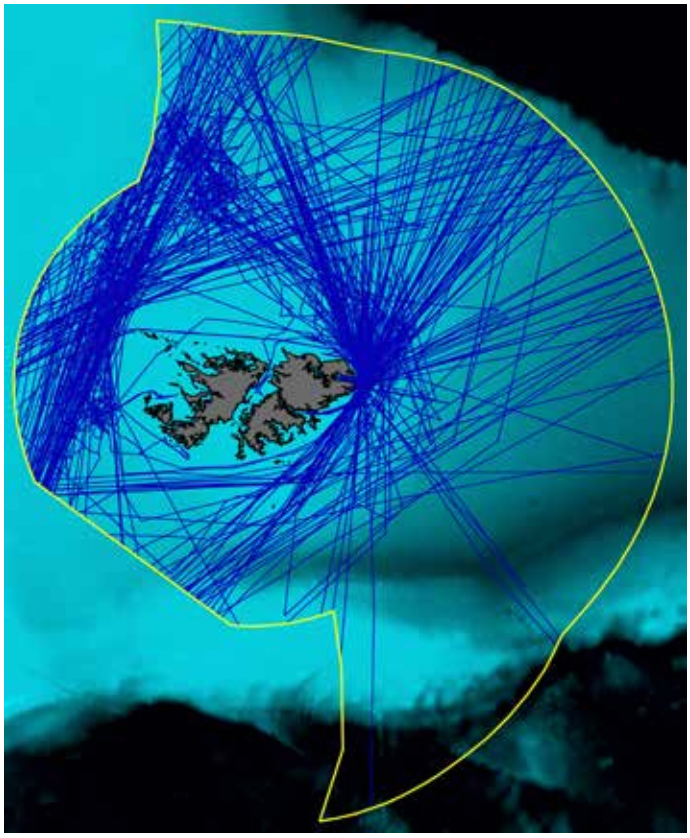
Participants at the MSP workshop in April 2016, Credit: S Hirtle

for a larger project on near-shore cetaceans that will start in 2016. The two complementary projects focussed on mapping the coastal areas of cultural value to islanders and mapping baleen whale recovery from historic whaling. Both required interviewing local residents and allowed for a public communication campaign throughout the islands that promoted MSP in the local community.

The Darwin project is coming to an end in June 2016, but it has developed much needed tools, stakeholder and government consultation and engagement to provide a sound foundation for the long-term sustainability of the MSP process. FIG's renewed commitment to the next phase of MSP with the ultimate production of the first Falkland Islands Marine Spatial Plan will ensure that the islands demonstrate marine environmental stewardship, with a holistic approach to management of the complex, productive and valuable marine environment that provides a wealth of economic and social benefits to the islanders.

For more information about Darwin Plus project DPLUS027 click **here**, or contact Amélie Augé, **AAuge@env.institute.ac.fk**

To access to all the workshop reports, maps, webGIS, database, etc, check the project webpage at **http://south-atlantic-research.org/research/current-research/marine-spatial-planning.**



Tracks of cargo ships around the Falkland Islands over one year, Credit: A Augé

Haematomma erythomma, Credit: Falklands Conservation

Bryophytes and Lichens Inventory and Conservation in the Falkland Islands

It is an unfortunate truth that bryophytes and lichens are usually overlooked by the general masses and even by the keen naturalist. There is no doubt that their general small size and difficulty in their identification to species level puts most people off, however in some areas of the world they can make up most of the vegetation.

This recently Darwin project, led by Falklands Conservation, addressed the critical gap in knowledge of lower plant diversity in the Falkland Islands. There are 171 native vascular plant species recorded from the Falkland Islands while for the three taxonomic groups studied for this project (mosses, liverworts and lichens), the number of recorded species exceeds 750, which is an incredible level of diversity for such a small area. They play an important role in ecosystem services of the islands e.g. soil and peat formation and retention, and carbon storage. They also influence water and nutrient cycling which is important in retaining moisture and preventing erosion, especially in dry and windy areas.

Project survey work was split into four large expeditions, which was complemented by in-house survey work conducted throughout the year. Different habitats and areas not visited in previous surveys were the focus of the field trips, and it became clear that bryophyte and lichen richness did not correspond with 'Important Vascular Plant Areas' of the Falklands.

Over the last two years the project has created a large network of international specialists to aid in numerous areas of the project from dissemination of results to specimen identification, through to 'boots on the ground' fieldwork. Many of the scientists have donated time and effort to maximise the efficiency of the monetary and time constraints of the project, for which the project team are thoroughly grateful. There has been international voluntary collaboration from individuals and institutions, with the most notable of these being Michigan University, Chicago University and Valparaiso University.

Results and data is still incoming from the last fieldtrip however there is a huge amount of knowledge gained regarding species richness and biodiversity of the Islands' bryophytes and lichens. Even though a large lichen survey was conducted in 1968, it is with this group that the greatest gain in knowledge has been made. Thanks to the fantastic work and expertise brought to the project by Alan Orange (National Museum of Wales) and Dr. Alan Fryday (Michigan University), to date 91 new species for the archipelago have been recorded, including 18 that are new to science. Undoubtedly, this number will increase over the coming months. A thorough survey of the liverworts carried out in 1968 culminated in a collection of 1000 specimens and a recording of 131 species. In just a three week visit for this project, Matt Von Konrat from Chicago University added another 8 species records. Around 20 new species records of moss have been added to the Falklands species list, with a possibility of one being newly described. This brings the present list up to 184 species.

In order to raise awareness of lower plants and lichens in the Falklands, and to fuel interest in continuing botanical study in the Islands after this project has ended, articles have been written for the Falklands Conservation Newsletter, detailing highlights and outputs of the project. The excellent turnout

Montane Bryophyte and Lichen assemblage, Credit: Falklands Conservation

for the workshops, presentations and school visits also demonstrate interest among the local Falklands community to learn more about the nature, ecology and biogeography of the Islands.

Another major legacy of this Darwin Plus Project will be the fully functional lower plants laboratory space and comprehensive herbarium and reference collection. The lichen field guide and the collation of species illustrations and descriptive text of species is a very important aspect of the legacy of the project, creating the basis for future amateur and professional interests and research in this area. The knowledge of Falklands Conservation staff and the local community will have been enhanced and these resources will create a foundation for future taxonomic and ecological research and educational work in the Falklands for generations to come.

For more information about Darwin Plus project DPLUS017 click **here**, or contact Dafydd Crabtree, **lowerplants@conservation.org.fk**

The villages of Gungonab, Sudan. Traditional birisch style houses, Credit R Klaus

Newsletter Contacts

The Darwin Initiative Secretariat (Defra)

The Darwin Secretariat is based in Defra and includes Clare Hamilton, Sally Cunningham and Shaluki Perera

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 at

darwin-newsletter@ltsi.co.uk