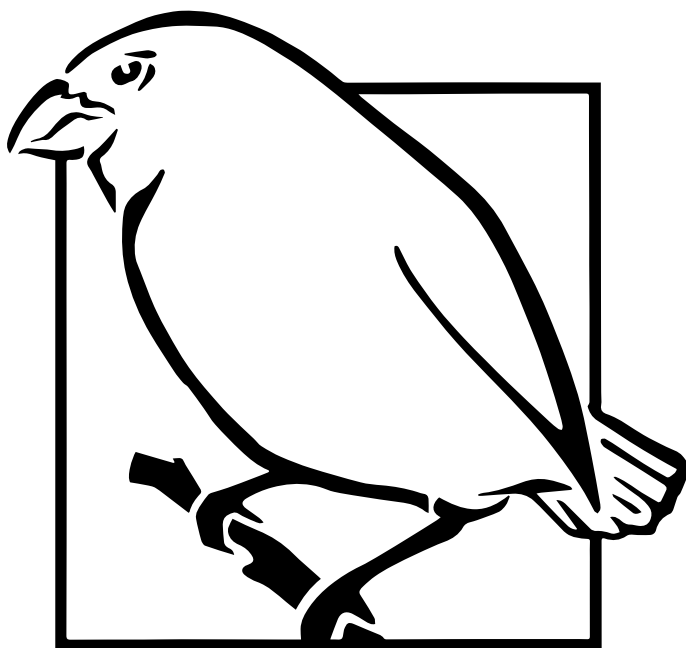


# Newsletter

November 2018



*Imbabura tree frog, just one of 45 species identified in 0.2km<sup>2</sup> of Tesoro Escondido Reserve in Ecuador this summer, Credit: Jim Pettiward, Synchronicity Earth*




**DARWIN  
INITIATIVE**

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)

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 [darwininitiativeuk.wordpress.com](http://darwininitiativeuk.wordpress.com)

 Department  
for Environment  
Food & Rural Affairs

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*Yayu buffer zone, where forest and coffee production coexist, Credit: Emily Garthwaite*

## Contents

<b>Publicity and information about the Darwin Initiative</b>	<b>3</b>
<b>A word from Darwin</b>	<b>4</b>
<b>Project articles</b>	<b>5</b>
Role of unconventional partners in long-term conservation	5
“Necessity is the mother of invention”	7
Tourism training buys solar lights, contributes to dietary diversity, and puts us in the spotlight for an international award!	9
Strong community links key to the success and legacy of the PRIMENET Project	11
The Ibis Rice Scheme, a mechanism to conserve Western Siem Pang Wildlife Sanctuary	14
Demand for Fish for Tomorrow is spreading along the shores of Lake Malawi!	15
Adapting and innovating in South Sudan	17
Mutually supportive implementation of the Plant Treaty and the Nagoya Protocol in Benin and Madagascar	19
Mapping St Helena’s biodiversity and natural environment	21
Mainstreaming biodiversity conservation and climate resilience at Yayu Biosphere Reserve, Ethiopia	24
Managing mosquitoes sustainably while supporting biodiversity	28
Unexpected achievements in the Tana River Delta	30
Learning ‘yerba mate’ lessons with communities in Paraguay’s San Rafael Atlantic Forest Reserve	31
New giant Atlantic marine protected areas under threat from plastic debris	33
<b>Newsletter contacts</b>	<b>36</b>



*ZSL staff collecting feedback from cooperative members around Shukla Phanta National Park in Nepal, Credit: ZSL*

## Publicity and information about the Darwin Initiative

For more information on the Darwin Initiative please visit [gov.uk/government/groups/the-darwin-initiative](https://www.gov.uk/government/groups/the-darwin-initiative)

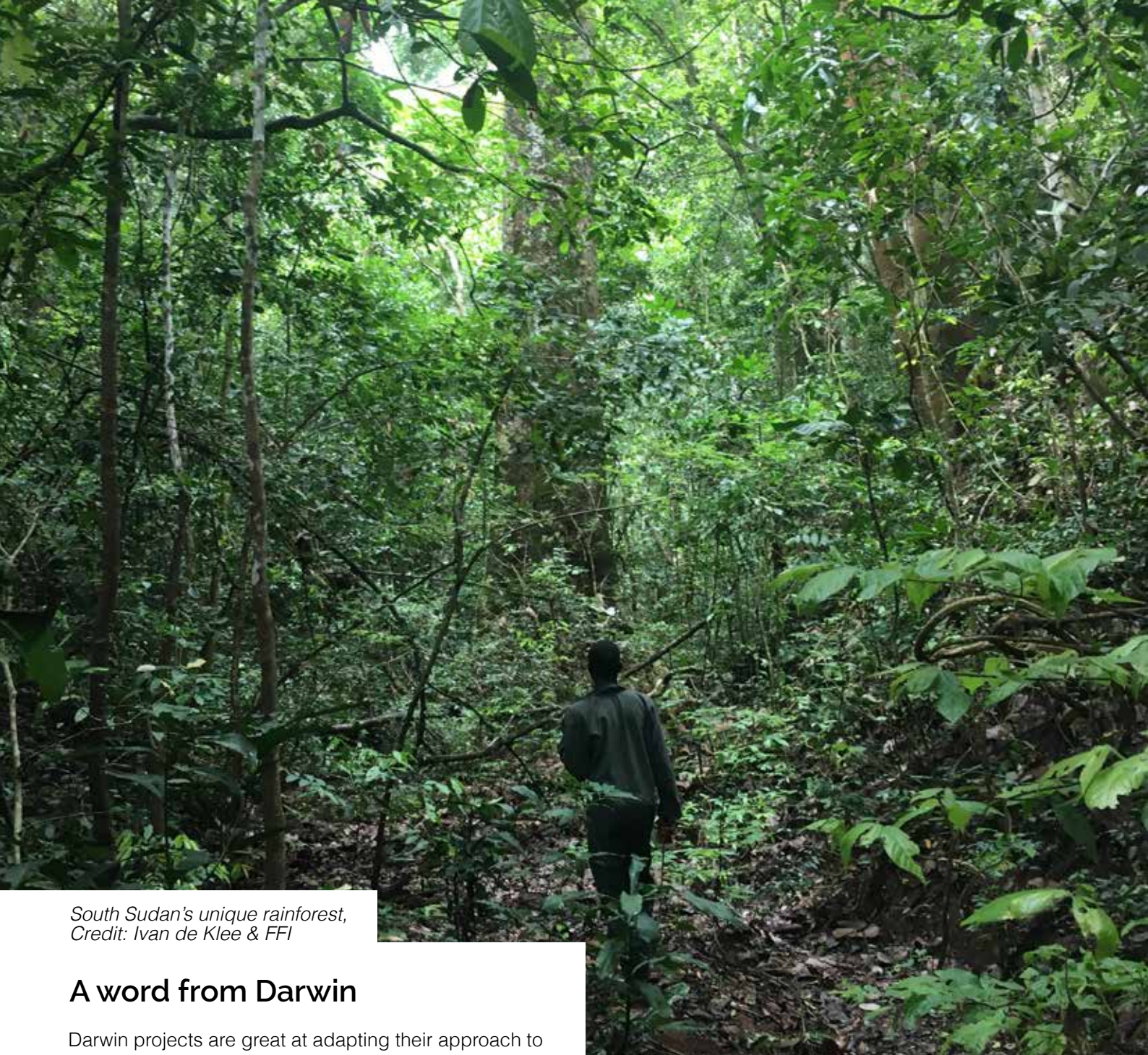
For further details about current and completed Darwin Initiative projects, including their final application forms, please visit [darwininitiative.org.uk](https://www.darwininitiative.org.uk)

We also have a blog, that includes news and thoughts on issues being tackled by the Darwin Initiative – both at the project and programme level. You can read it here [darwininitiativeuk.wordpress.com](https://www.darwininitiativeuk.wordpress.com)

We're also keen to share other Darwin project blogs. If you have a blog you'd like to share on our website, please get in touch at [darwin-newsletter@ltsi.co.uk](mailto:darwin-newsletter@ltsi.co.uk)

### 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 secures continued Government funding.



*South Sudan's unique rainforest,  
Credit: Ivan de Klee & FFI*

## A word from Darwin

Darwin projects are great at adapting their approach to fit changing conditions on the ground, and often have to wrestle with issues outside of their control – but the unexpected can sometimes have a positive influence, too! Projects are designed with their activities in place and an idea of what they will achieve, but when it comes to implementation, things can often emerge in surprising ways.

In this edition of the newsletter we celebrate some of the “Unexpected Achievements” Darwin projects have encountered along the way. We hear from a project in Nepal which has, through engaging with an unusual partner, managed to exceed its targets twofold. In Uganda, an ecotourism project has recently received an unexpected award nomination...and we even have a recipe for a homemade life jacket, an unexpected innovation from a sustainable alternative livelihoods project in Cameroon!

We are also currently in the middle of Darwin's 25th funding round, and we received 326 applications at Stage 1, with 71 applicants invited to submit a Stage 2 application. We recently hosted a workshop in London to help applicants develop their Stage 2 proposals. The slides and proceedings from the day can be found on the website: <http://www.darwininitiative.org.uk/publications/workshop-proceedings/darwin-stage-2-applications-workshop-november-2018>

The Stage 2 deadline is in early December, so we wish everyone who is currently working on their proposals good luck!

We hope you enjoy this edition of the newsletter!



Women-led cooperative members conducting monthly meeting, Credit: ZSL

## Role of unconventional partners in long-term conservation

Shukla Phanta National Park (ShNP) in the far west of Nepal, with an area of 305 km<sup>2</sup>, boasts some of Nepal's greatest biodiversity. The park holds the world's largest herd of Swamp Deer (*Rucervus duvaucelii*) and is also home to several globally threatened and iconic species including Bengal Tiger (*Panthera tigris*), One-horned Rhinoceros (*Rhinoceros unicornis*), Asian Elephant (*Elephas maximus*), Bengal Florican (*Houbaropsis bengalensis*), and Hodgson's Bushchat (*Saxicola insignis*).

But the lowland Terai is also one of the most densely populated areas of the country. The communities living around ShNP rear large numbers of livestock, mainly cow and buffalo, for milk production; the sale of milk and milk products in nearby markets provides most of their income. Despite the rich natural resources, poverty is widespread around ShNP and, therefore, a sizeable section of the local community is heavily dependent on forests for fuelwood, fodder, timber, non-timber forest products and grazing grounds for their livestock.

“ our efforts to establish veterinary clinics to provide better health services for livestock and reduce transmission of disease between livestock and wildlife led to us engaging a range of unconventional stakeholders

”

A three-year Darwin Initiative-funded project was launched to address the problem of illegal livestock grazing in the core areas of ShNP. The aim of the project was to promote a more productive, but more expensive, breed of livestock which would reduce the grazing pressure inside the park. To take advantage of this breed, communities needed the financial capital to purchase them, the veterinary services to keep them healthy, and the access to fodder to feed them without the risk of grazing them inside the park.

The project worked to provide for these needs by establishing 1) women-led savings cooperatives to enable communities to purchase the livestock, 2) veterinary clinics to improve access to veterinary services, and 3) local nurseries, stall feeding and community managed grasslands to improve the availability of fodder for livestock.



Shukla Phanta Grasslands, Credit: ZSL



Inauguration of Darwin Initiative supported veterinary centre, Credit: ZSL

Often organisations that are not directly linked to conservation outcomes are barely recognised as stakeholders for conservation projects. But our efforts to establish veterinary clinics to provide better health services for livestock and reduce transmission of disease between livestock and wildlife led to us engaging a range of unconventional stakeholders, most notably the District Livestock Services Office (DLSO). DLSO is the local government agency that is responsible for developing livestock husbandry and related industries, and the project's planned engagement had been relatively infrequent consultations to draw on their expertise. However, during implementation more regular engagement with DLSO revealed some unexpected opportunities to work together and achieve shared objectives, to the benefit of conservation.

“  
**With DLSO as a key partner, the project achieved a 222% increase in the number of households with access to veterinary clinics around ShNP, nearly twice the increase targeted at the project outset**  
 ”

Alongside the technical expertise that DLSO brought, they also took direct ownership of the veterinary clinics thereby ensuring their long-term financial sustainability and institutional support. Due to this ownership by DLSO the project was able to secure municipal land to establish the veterinary clinics, helping ensure they had better facilities. With DLSO as a key partner, the project achieved a 222% increase in the number of households with access to veterinary clinics around ShNP, nearly twice the increase targeted at the project outset.

This highlights the enormous opportunities available when conservation efforts identify common ground and shared objectives with influential stakeholders working in different areas. Leveraging these unconventional partnerships can provide long-term support for conservation initiatives by tying them to economic and political priorities. This long-term support is vital as conservation impacts are achieved in the long-term, not during three-year projects.

For more information on project 22-009 please click [here](#).



*'Group d'Initiative Commune des pecheurs' safely clad for action, Credit: PGS, FCTV, TF-RD, AWF*

## “Necessity is the mother of invention”

Living around a National Park can often be great fun: fabulous views, clean air, wonderful wildlife...but when you're struggling to meet even your most basic human needs, living alongside a Protected Area, Wildlife Reserve or some other conservation site can be yet another restriction and regarded as such; all burden and no benefit.

The partners working together on Darwin project 24-005 recognise only too well that for people living around the Dja Faunal Reserve (DFR), Cameroon, the Reserve gives them far more problems because it's there, than if it wasn't. Livelihoods built on hunting, fishing, and forest clearance for crop-growing are just not possible because of the need to protect the natural spaces and the wildlife the Reserve contains. New ways of finding a living must be found if the people are to survive and build families.

And it is amazing to find just how creative and adaptable human beings can be when faced with such challenges. People living in isolated, rural communities often have to come up with ingenious solutions to overcome problems that many of us would regard as simply inconvenient rather than life-threatening.

In the case of the 17 village communities located in the 'northern buckle' of the DFR – one of the few buffer zones around the Reserve, the Darwin-funded project provides support and resources for building food security as well as addressing poverty. Using a Participatory Learning and Action methodology, the partners work closely with the people in the villages in order to understand how to best to provide them the support they need. Communities have historically relied upon hunting for wild meat to provide animal protein in their diets.

Where hunting of wild meat is either illegal or unsustainable, local people have to find new ways to get the food they need. This may mean looking at alternative sources for meat and fish, or setting up ways to earn money, which will enable them to buy animal protein rather than hunt for it. With the worldwide demand for cocoa continuing, one of the major ways that the project can help people create income is to support cocoa farming, and this is being done to great effect.

For those who still want to catch their own food, and identified through the Participatory Learning and Action process (using such tools as pair-wise comparisons), the villagers elected to try a truly innovative approach – creating a sustainable fishing zone in the nearby Dja river so that they could double, even triple, the amount of fish they could catch. People who had never focussed on fishing before were now keen to try out the new fishing gear and start landing the big ones (and leaving the little ones to replenish stocks).

But the Dja river can be a dangerous place. In the dry seasons the river runs slow, placid and is easily negotiated by locally-made canoes. When the rains come however, the river turns into a dangerous beast, and the fishermen have to retreat to the tributaries.

“  
**When the rains come the river turns into a dangerous beast, and the fishermen have to retreat to the tributaries**  
 ”

Even these smaller offshoots can be life-threatening and wearing safety gear becomes vital. Easier said than done; there is no local lifebuoy shop, and even if there was the



*Steps to making a life-jacket,  
Credit: PGS, FCTV, TF-RD, AWF*

cost of a life-jacket would be prohibitive to a person who earns 20,000 cfa (about £24) per month from fishing.

So what can be done? Here's the recipe for creating your own life jacket, using bits and pieces of thrown away rubbish, boat rope, and a fair degree of trial and error:

- Take two discarded plastic bags, any size
- Stuff both with empty plastic water bottles (good for re-cycling and takes them out of the environment)
- Stitch boat rope through the bottles and bag
- Repeat for another side
- Link both bags together with boat rope
- Stick head between the bags and let each bag fall onto different sides of the body
- Take the boat rope loops around base of bags, encircling the body inside
- Don't forget to take group picture....and voilà!

These pictures show the impressive results. Wearing the life jackets gives the fishermen and women a greater chance of survival if they fall into the water and they haven't previously learned to swim. The project team emphasise the importance of safety, and stress that to

be a fisherman, or woman, it is not only essential to know how to use the equipment, but also be able to swim. It is of such importance that we have built the safety measures into our agreements. We stress the following - that:

- Recipients of equipment must fish on the river bank until they learn to swim
- They should never go fishing without a life jacket on
- They should never go out alone on the river until they learn to swim

Armed now with new gear, training and having created their own safety equipment, many more people in the villages are turning to fishing rather than illegal hunting. The fish can be eaten locally, or even taken to market to be sold. We're looking at ways to preserve the fish so that they can be transported further without danger of rotting.

It's a big success for the people (and the project) at this stage and wouldn't have been possible if the villagers hadn't invented new ways of ensuring safety on the river. It was necessary...

Look out for updates on the project at:  
[www.landscapeconservation.org.uk/darwin-project](http://www.landscapeconservation.org.uk/darwin-project).  
For more information on project 24-005 please click [here](#).





Horticulture group member Warren admiring his improved produce after training, Credit: Victoria Pinion

## Tourism training buys solar lights, contributes to dietary diversity, and puts us in the spotlight for an international award!

At Bwindi National Park in Uganda, tourists pay \$600 for a permit to track gorillas, but people living around the edge of the forest receive little benefit. There are few conservation or tourism-based jobs open to local people and low levels of skills development have resulted in low quality handicrafts and community-based enterprises that have attracted limited sales amongst tourists. The result is that relationships between local people, the park authority and tourism providers have been poor, and poaching, snaring and other forms of illegal resource use are prevalent.



"Bwindi Honey" made by former poachers, Credit: Dilys Roe

Our project - *Local economic development through pro-poor gorilla tourism* - has been trying to turn that around. Over the last two years we have been investing in local people's skills to produce quality tourism products and services that tourists, tour operators and lodge managers want to buy and hence generate viable livelihoods. We have worked with 14 small enterprises and trained over 300 local people in basket weaving, guiding, carving, horticulture and apiculture. By using a "Forest Friendly" badge to help identify the new and improved products, sales of baskets have gone through the roof. This report from one of the weaving cooperatives illustrates the kinds of impact the project is having:

“  
...a new lodge in Ruhija called Agandi Uganda Eco- Lodges gave us an order to make laundry baskets, bin baskets and also serving baskets. The ladies are very excited and they have already started weaving. They will be paid more than double for these baskets than the other, lower quality old design, ones  
”

These were exactly the kind of outcomes that we hoped the project would achieve. But we have also heard of impacts that we really didn't expect. For one weaving cooperative sales have been so good that all its members have been able to equip their houses with solar lights. To the south of the park, a commercial honey producer – Golden Bees – has opened up a new honey shop having been so impressed with the quality of the honey that former poachers living around the park have been trained to produce.

And not only are lodges agreeing contracts to buy locally produced fruit and vegetables now that the range, quality and reliability of supply has improved, but local people are also enjoying the novel vegetables (yes, a cauliflower is novel vegetable in Bwindi!!) that are being produced and significantly improving their dietary diversity.

To cap this series of unexpected achievements, we have recently learned that our project has been shortlisted for a World Responsible Tourism Award – an achievement that was definitely not in our logframe!

For more information on project 23-032 please click [here](#).



Tina from Change a Life Bwindi, displaying baskets made by women in her cooperative, Credit: Dilys Roe

### Bwindi lives and livelihoods guided trails

These guided trails offer a unique understanding of this culturally rich region of Uganda, close to the Bwindi Impenetrable National Park. Bwindi Specialist Guides take you on a tour of traditional ways of life and local culture, as well as the beautiful surrounding scenery and wildlife.

#### Your experience

Discover the breathtaking Rubuguri hills, just outside Bwindi Impenetrable National Park, on a guided trail with an experienced and knowledgeable local Bwindi Specialist Guide. Learn all about the lives of local people as you meet farmers, weavers and beekeepers.

Starting at the Bwindi Honey Shop in Rubuguri, your guide will take you out of town and show you how local people earn a living – including a **market gardening enterprise** established as an alternative to poaching, a **coffee experience**, and a **banana plantation**.

Look out for the pied kingfishers and grey crowned cranes at the **Kashasha Wetlands**, and spot the beautiful hidden pond at **Bereta and Banyara Waterfalls**. Meet and learn the craft of the **highly skilled women who weave baskets**, designed to reflect the beautiful landscape in which they live.

Along the way you will have opportunities to see how people process coffee beans and make local gin. You can also buy local honey, baskets and other handicrafts. See inside for more about the unique experiences this guided trail has to offer.

#### About the trail

The trail starts and ends at the Bwindi Honey Shop in Rubuguri town. It takes **3.5 – 4 hours**, and covers **5.5 km** in the Rubuguri hills to the south of Bwindi Impenetrable National Park. This is a guided tour only. Please see 'How to book' for more information.

The **Reformed poachers trail** is one of several new tourist products and services that have been developed to support poor people living close to Bwindi Forest under the 'Local economic development through 'pro-poor' gorilla tourism in Uganda' project ([www.iied.org/pro-poor-tourism-uganda](http://www.iied.org/pro-poor-tourism-uganda)), funded by the UK Government's Darwin Initiative.

The fee you pay for the trail is all retained locally and includes payments for the local people you will meet on the trail as well as for the guides.

#### How to book

Please book via your **tour operator, lodge manager** or directly with the **Bwindi Specialist Guides Group**. Contact **Paul Ahimbisibwe** via email on [ahimbi.paul@gmail.com](mailto:ahimbi.paul@gmail.com) or phone: +256 789 617 334 / +256 755 924 885.

#### Important information

The trails are intended to be guided by a Bwindi Specialist Guide only and are not self-guided trails. The trail image given on this flyer is for illustrative purposes only and is not intended to be used as a map or guide. You are responsible for your own safety while on the guided trail. IED, Responsible Tourism, ITFC, International Gorilla Conservation Programme and Darwin Initiative are not liable for any injury or accident that may occur on the trail, or for the content of the trails. The visits and activities offered on the guided trails are subject to the availability of the local participants and may be subject to change. Images are for illustrative purposes only.

This project was funded by the UK Government's Darwin Initiative. However, this does not imply endorsement and the content of this flyer does not necessarily reflect opinions of the UK Government.



Bwindi trail flyer, Credit: IIED



Brown-headed spider monkey  
Credit: Juan de Dios Morales

## Strong community links key to the success and legacy of the PRIMENET Project

The Darwin Initiative PRIMENET project was funded in 2005 with the aim of establishing a sustainable network for primate conservation in northwest Ecuador. It provides a clear example of legacy - through the unexpected. Eleven years in and the project has led to the creation of a 40 km<sup>2</sup> protected area, the Tesoro Escondido Spider Monkey Reserve, dedicated to ensuring the conservation of the critically endangered brown-headed spider monkey (*Ateles fusciceps*) and the Chocóan rainforests of Ecuador.

“ forgotten rainforests are global biodiversity priorities with some five percent, or less, remaining

These forgotten rainforests are global biodiversity priorities with some five percent, or less, remaining. The protected area is supported by a parabiologist programme that provides biodiversity training and employment to local youth, with a focus on opportunities for women. The expertise of the parabiologists team supports visiting national and international researchers undertaking biodiversity research in the Chocóan rainforest system.

Our ‘community research hub’ model differs from traditional research stations as researchers live in accommodation provided by the community, ensuring immersion in local life and investment in community infrastructure, at the household level.

A retrospective look suggests that success of the project comes from building strong community links. The project had initially met with resistance to the establishment of a protected area as local communities perceived a loss of independence. Trust and friendships were built by engaging at community level throughout the project, but particularly by the current reserve manager who lived in the community during her doctoral research on the ecology and challenges of conservation of the brown-headed spider monkey.



Making Washu Chocolate,  
Credit: PRIMENET



*Reserve provides protection for species such as sloths from hunting for the bushmeat trade Credit: PRIMENET*

It is this community engagement and local ingenuity that has been vital in problem solving. For example, the recognition that cacao production was a key driver in local deforestation, yet a vital income source for the independent local farming families, has led to the establishment of a sustainable chocolate project, Washu Chocolate, managed by the Washu Project.

The chocolate project ensures a set minimum price for cacao, allowing farmers to transition to higher value organic production, and avoid exploitation by middle men. These financial benefits to the farmers come in exchange for an agreement to halt deforestation and allow for forest regeneration.



*Mika Peck demonstrating use of high resolution drone mapping imagery at Tesoro Escondido field station: PRIMENET*

Educational outreach programmes co-developed and delivered by community parabiologists, emergency medical training, agroecology training, and the ongoing development of a local food network continue to provide opportunities to identify and develop an alternative sustainable development model to deforestation and oil palm at Tesoro Escondido and its surrounding communities.

**“ Co-production between researchers and community leads to appropriate and locally effective solutions to the combination of local livelihood, educational and medical challenges ”**

A recent evaluation of the project suggests that success comes, in part, from the trust and friendships generated by key research team members and change agents in the community, bolstered by real engagement in addressing community concerns.

Co-production between researchers and community leads to appropriate and locally effective solutions to the combination of local livelihood, educational and medical challenges in addition to the challenges of biodiversity conservation.

This requires engagement to build trust, a process we term 'anthropological immersion'. It is important to note that this process often takes time, unless a project already has strong local community connections, but is a vital step to success and unexpected results.

The project has also succeeded due to substantial long-term financial support - beyond initial Darwin funding - that continues to support the research team, the development of sustainable livelihoods and land purchase to establish the protected area and build connectivity corridors to neighbouring reserves.

“  
Little did we know at the time that this would later lead to one of the participants contacts supporting the majority of land purchase and ongoing costs of the team.

One of the hardest things to predict is ongoing financial support at the end of the Darwin funding cycle, but it is worth keeping the quote by Amy Hempel in mind, “luck is where preparation meets opportunity”, and ensure your work engages as widely as possible to bring awareness of the work to as wide an audience as possible.

In our case, substantial long-term funding came as a result of citizen-science research programmes providing first-hand experience to people of our research taking place in Ecuador under the parabiologist model.



*Parabiologist working at the forest regeneration tree nursery for critically endangered tree species, such as Magnolia dixonii, Credit: Jim Pettward, Synchronicity Earth*

”  
Little did we know at the time that this would later lead to one of the participants contacts supporting the majority of land purchase and ongoing costs of the team.

Even during the most challenging moments never underestimate the unexpected support garnered from opening up opportunities for engaging people in conservation projects.

For more information on project 14-040 please click [here](#).



*Tesoro Escondido Reserve protects the habitat of top predators such as the Chocoran bushmaster, Credit: PRIMENET*



Rice field in Khes Svay village,  
Credit: Nara Nou Alyny

## The Ibis Rice Scheme, a mechanism to conserve Western Siem Pang Wildlife Sanctuary

BirdLife International and Sansom Mlup Prey initiated the Ibis rice scheme in aiming at improving food security for villagers, and wildlife conservation within Western Siem Pang Wildlife Sanctuary. The Ibis rice scheme aims to provide local communities with an incentive to engage in conservation, by offering farmers a premium price for their rice if they agree to abide conservation agreements that are designed to protect the rare water birds and other species that use nearby protected areas.

“  
villagers can already grow as organic and will receive a 20% premium price for their rice instead of 10% last year  
”

The scheme is in its second year of implementation in Western Siem Pang Wildlife Sanctuary, and this year successfully expanded to a total of 202 households in four villages. Usually as per the Ibis rice rules, the rice grown can only be certified organic after three years of process. Yet, in Western Siem Pang it was decided to transition from Ibis rice to a different organic certification. This means that participating villagers can already grow as organic and will receive a 20% premium price for their rice instead of 10% last year.

This is a first in the implementation of the Ibis rice scheme and is due to the fact that, in Western Siem Pang, the Ibis rice growers supported by BirdLife rely mainly on natural resources and apply nature-based techniques to grow rice. These techniques are harmless to environment, especially water birds and biodiversity in the area. Villagers' rice fields have never been exposed to chemicals or pesticides.

Furthermore, after harvest, they keep the rice straws or stem of rice at the rice field for cow or buffalo feeding. These animals will then provide manure that fertilises the rice field. Finally, villagers have been growing traditional rice varieties for more than 10 years. Hence, they grow more than 5 varieties of rice in one rice field.

Mrs. Buth Sao, a member of Ibis rice at Khes Svay village, expresses her sincere thanks to BirdLife and Sansom Mlup Prey for supporting her and others with the Ibis rice scheme. She and other villagers feel happy to hear that this year the incentive price is up to 20% above market price, so they will gain more income from selling Ibis rice which could help the villagers secure their livelihood and decrease illegal activity in the forest. Next year, she suggests that the project should provide more Ibis rice seeds to villagers to expand the Ibis rice production in their existing fields to generate more income and food security.

In September, the rice was audited and external inspectors said that the rice fields are organic. They encouraged villagers to continue growing either traditional rice seed varieties or Romdoul in order to protect the traditional seeds for next generations.

For more information on project 23-010 please click [here](#).



20% profit increase makes Mrs. Sao happy, Credit: Nara Nou Alyny



*Fish Conservation Committee in Nkhotakota District, Malawi, Credit: RIPPLE Africa*

## Demand for Fish for Tomorrow is spreading along the shores of Lake Malawi!

70% of people in Malawi live below the international poverty line and the population has risen dramatically from five million in 1975 to over 19 million today. Population pressure, poverty and a high dependency on natural resources have led to food insecurity and biodiversity loss.

Lake Malawi, the ninth largest and most biodiverse freshwater lake in the world, covers 20% of Malawi's area. However, in recent years overfishing has led to declining fish stocks and to combat this, fishers are using longer nets with smaller mesh sizes, many made from malaria prevention mosquito nets.

“ many of Lake Malawi’s species are now classified as endangered or vulnerable on the IUCN Red List

These catch fish at a very small size, before they are fully grown and able to breed, which impacts the whole population. As a result, many of Lake Malawi’s species are now classified as endangered or vulnerable on the IUCN Red List. The problem has been exacerbated by lack of government funds to enforce fishing regulations.

RIPPLE Africa, a UK-based charity, started its *Fish for Tomorrow* fish conservation project in 2011, working in partnership with fishing communities, their leaders and the District Fisheries Department in the northern district of Nkhata Bay.

“ the project is now covering the whole Nkhata Bay District and, thanks to a Darwin Initiative main grant this year, is also being introduced into the next district to the south, Nkhotakota

Here, local communities supported by their leaders, are empowered to control damaging fishing activity, regulate closed seasons and protect fish breeding areas. Simple, cost effective community education and ongoing support underpin the project which is now covering the whole of Nkhata Bay District and, thanks to a Darwin Initiative main grant this year, is also being introduced into the next district to the south, Nkhotakota.



*Confiscated mosquito drag nets in Nkhotakota - 5 large nets each made of 200 mosquito nets copy, Credit: RIPPLE Africa*

District fish conservation bylaws have been signed and Fish Conservation Committees are now being established here. Community members are protecting breeding areas and confiscating illegal nets to protect baby fish and enable them to grow large enough to breed. Local fishing communities now have ownership of both the problem and the solution and are keen to make sure that there are fish in the lake for future generations.

“  
**Local fishing communities now have ownership of both the problem and the solution and are keen to make sure that there are fish in the lake for future generations**

However, one unexpected outcome of our work so far is that the success of the project in its current areas of operation is now leading to pressure for RIPPLE Africa to introduce the project into other lakeshore districts. Key District stakeholders from Salima, the district to the south of Nkhotakota, recently visited fish conservation committees to see for themselves the impact that the project is having on fish stocks and livelihoods and Salima District Councillor, Beatrice Mwale, was really impressed by the teamwork and community empowerment that the project has demonstrated. Salima’s District Fisheries Officer is now urging RIPPLE Africa to extend the reach of the project into Salima as well so that they can also restore ‘the lost glory of Lake Malawi’ in their district.

Given funding, that is exactly what RIPPLE Africa is keen to do – watch this space!

”

For more information on project 25-009 please click [here](#).



*Mosquito nets sewn together to make a drag net, Credit: RIPPLE Africa*





*Community Wildlife Ambassadors Patrol the protected area, Credit: Ivan de Klee & FFI*

## Adapting and innovating in South Sudan

If there is anywhere in the world that presents constantly changing conditions it is South Sudan, whether it is insecurity on the roads due to fighting between rebel factions or no access to the project site due to the fact the roads themselves have turned into swamps; a need for adaptation and innovation is high on the list!

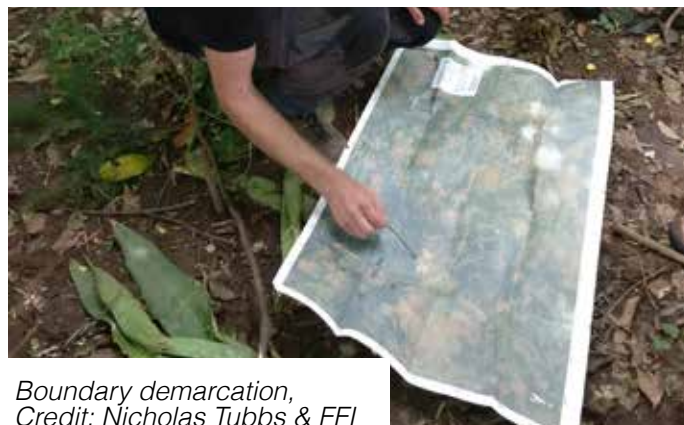
The Darwin Initiative funded Fauna & Flora International (FFI) South Sudan project runs in the South Western corner of the country, on the borders with the Democratic Republic of Congo and the Central African Republic; a slither of tropical rainforest where East Africa fuses into Central Africa. South Sudan is in a civil war with many sub groups and warring factions, and whilst this part of the country is relatively safe and stable, we need to be highly adaptable and resilient in our work.

“ our team was unable to make it from our base in Yambio Town out to the Protected Area and the surrounding communities

”

Along other elements, the project has been working on protected area management with the Wildlife Service of South Sudan in tandem with local community members.

It is running livelihood projects in the Bomas (villages) surrounding protected areas and establishing and demarcating their boundaries. There are now regular monthly patrols (an expected achievement!) in one of the protected areas. These patrols are led from the Ranger Post by three Rangers from the Wildlife Service of South Sudan, however the additional team members are made up of nine community members who have been trained to patrol and record data using GPS and are named Community Wildlife Ambassadors. This integration of community members into the Protected Area Management structure not only provides a vested interest of the community in the area but provides skills, income and employment to an otherwise very poor and isolated group of people.



*Boundary demarcation, Credit: Nicholas Tubbs & FFI*



Reaching the field by any means,  
Credit: Ivan de Klee & FFI

There was a period of time earlier this year when due to insecurity on the roads and then very poor weather our team was unable to make it from our base in Yambio Town out to the Protected Area and the surrounding communities - it can take 8 hours to drive 25km. But this insecurity and need for flexibility can sometimes bring wonderful surprises and achievements and is a great way to spot conservation progress.

The first unexpected achievement during this period of stagnation was that together with our partners we were able to make progress regardless of these challenges. The gathering of GPS coordinates for the boundary demarcation, the rebuilding of the Game Reserve Ranger Post and the bimonthly Community Wildlife Ambassador (CWA) Patrols all depend on the supply of rations;

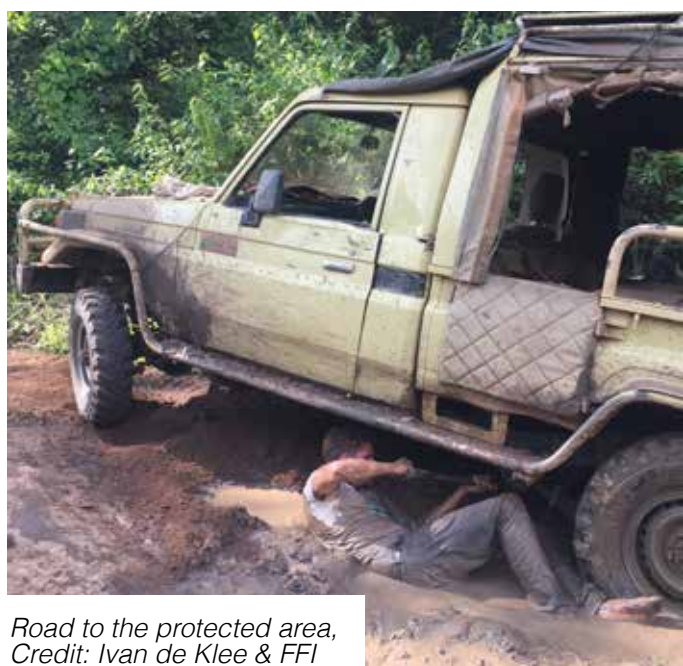
this is of course impossible without access by vehicle. Or so I thought...5 heavily laden motorcycles later and we were set to go. The show goes on!

“ they had hacked and cut their way through incredibly dense undergrowth, through rain and with fewer rations than normal for several kilometres ”

The real achievement though was the work that the rangers and the CWAs took on, on their own initiative. Once we eventually made it back out after the security and weather had improved, the CWAs and the Rangers had covered a huge amount of ground against all odds. To put this into context, they had hacked and cut their way through incredibly dense undergrowth, through rain and with fewer rations than normal for several kilometres. A rate that would be a highlight in the dry season, let alone the wet season! The attitude and the work ethic that the rangers and the CWAs are now implementing into the work is remarkable and enthusing for our work going forward.

In South Sudan, people are accustomed to their plans being thwarted but demonstrate unique resilience, constantly ready to create alternative plans of action. A pleasure to work with, the South Sudanese teach us patience, innovation and that where there is a will, there is a way. The achievement? There now really is a remarkable will for conservation.

For more information on project 25-002 please click [here](#).



Road to the protected area,  
Credit: Ivan de Klee & FFI



Community seedbank project established in Analavory, Credit: Michelle Andriamahazo

## Mutually supportive implementation of the Plant Treaty and the Nagoya Protocol in Benin and Madagascar

The project *Mutually supportive implementation of the Plant Treaty and the Nagoya Protocol in Benin and Madagascar* was implemented with the support of the Darwin Initiative from April 2015 to April 2018. The project achieved its primary objectives, which were to develop, and have adopted, national laws and community protocols for linked-up community to national level implementation of two international agreements – the Plant Treaty and Nagoya Protocol.

“ the project was able to support additional (unplanned) workshops in the four communities aimed at analysing the impacts of climate change on food security and to identify potentially adapted plant genetic resources from local farmers

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Moreover, the project was able to report the following unexpected, additional achievements, partly due to the hard dedicated work of all project partners, and partly due to the project's ability to leverage additional financial support from other projects and organisations: i.e., the **ABS Capacity Development Initiative** and the Bioversity coordinated project, **Genetic Resources Policy Initiative**. All four project communities developed community biodiversity registries, community biocultural protocols and community biodiversity investment plans. In addition, the project was able to support additional (unplanned) workshops in the four communities aimed at analysing the impacts of climate change on food security and to identify potentially adapted plant genetic resources from local farmers, the national genebank, other countries' genebanks and genebanks hosted by international organisations.

Not only did the project support them to obtain those plant genetic resources from sources outside the respective countries, but also to plant and evaluate the performance of some of those materials in farmers' fields in the communities during the life of the project.



*Inside the community seedbank,  
Credit: Michelle Andriamahazo*

One of the findings of these additional project activities was that two of the communities lacked the means to conserve and manage a lot of the crop diversity they wanted to use. The project was able to leverage additional outside investment to support the construction of two community genebanks: one in Tori-Bossito, in Benin, and another in Analavory, Madagascar.

“ the project was able to leverage funds to support national project partners to participate in a number of international meetings and workshops and participate in side events at those international meetings

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In addition to the unexpected achievements experienced at the local level, the project was able to leverage funds to support national project partners to participate in a number of international meetings and workshops and participate in side events at those international meetings.

These events provided excellent opportunities for national partners to share their experiences and their plans and perspectives on the implementation of the two agreements in their countries.

For more information on project 25-002 please see <https://www.biodiversityinternational.org/darwin-benin-madagascar/> or click [here](#).



*Outside the community seedbank,  
Credit: Michelle Andriamahazo*



*Gumwoods Soil Sampling, Credit: Katie Medcalf, Environment Systems*

## Mapping St Helena's biodiversity and natural environment

Our project is working to produce the most comprehensive environment maps of St Helena, showing the functioning of habitats and soils, to help current and future ecosystem services monitoring. Since the beginning of the project, we have achieved a few unexpected results, which have been summarised by our project partners:

“ The original 1980s habitat classification scheme was soon found not fit-for-purpose, so an updated scheme had to be created

### Environment Systems

The St Helena mapping task initially set out to build on a 30-year-old habitat map using experiences gained from other Overseas Territories. The original 1980s habitat classification scheme was soon found not fit-for-purpose, so an updated scheme had to be created. This took many hours of work on-island with an expert group, and much thought about how Earth observation and fieldwork could best describe the island's unique and internationally important habitats. This somewhat arduous process forced all of the stakeholders to describe not just the habitats and data gaps, but also how the dynamic and modified habitats of St Helena interact together with the rare and endemic species.



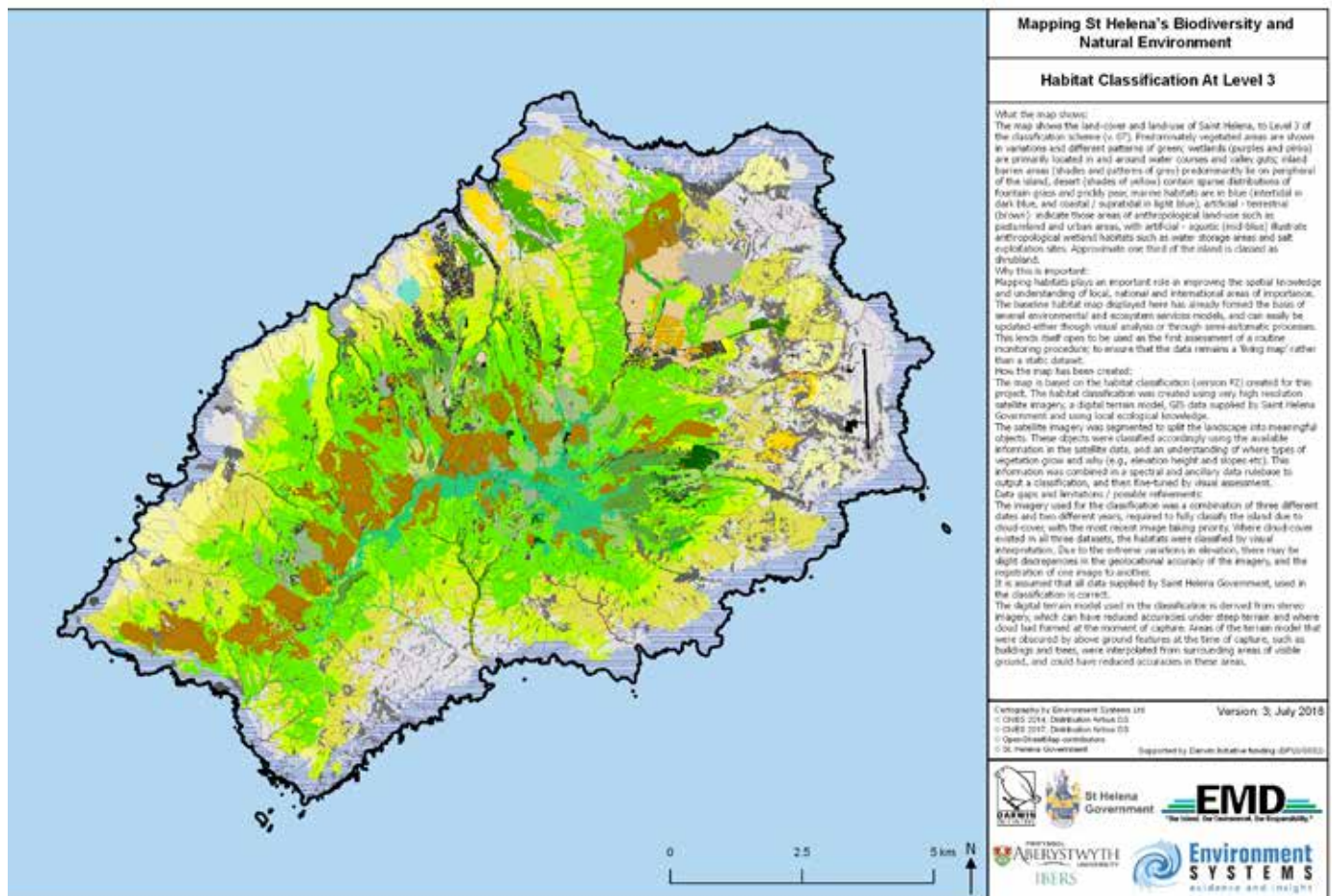
*Earth Observation Class Map, Credit: Samuel Pike, Environment Systems*

“ The work characterised communities under relict and recently planted gumwood areas (e.g. Millennium Forest), focussing on growth enhancing and growth limiting fungi

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An impressive task, considering the island's 300+ year history of imported and introduced species of flora and fauna. The habitat classification scheme was created in compatibility with the IUCN Habitat Classification Scheme, with distinct St Helena sub-classes. It now underlines work for baseline, quantitative, island-wide assessments on habitats and soil characteristics; themselves now used by a variety of professionals, from various organisations, for a diverse range of applications. Moreover, it provides a key on-island resource for habitat management and policy frameworks; to maintain and enhance the island's natural resilience, conservation, and protection, into the future.

One aim of the soil ecosystem services element of the project was to estimate organic carbon (C) stocks. As expected, the upland, heavily vegetated soils contained the largest stocks. Less expected were the high concentrations of C in some sparsely vegetated soils from Prosperous Bay. Having eliminated analytical issues, we are left with questions. Was this relict C from an earlier forest (no historical record of this)? Could it result from deposition from erosion of surrounding vegetated slopes (no evidence of C-rich layers in the soil cores)? Additional soil samples were taken in April 2018 for fungal DNA analysis from *Commidendrum robustum* (St. Helena gumwood) woodlands. Fungi breakdown organic matter releasing nutrients and form symbiotic associations with plants (mycorrhizas); pathogenic and parasitic fungi reduce plant growth. The work characterised communities under relict and recently planted gumwood areas (e.g. Millennium Forest), focussing on growth enhancing and growth limiting fungi. Results will inform future cultivation and planting of gumwoods, for example expansion of the Millennium Forest. The sequencing has been completed and data analysis is ongoing.

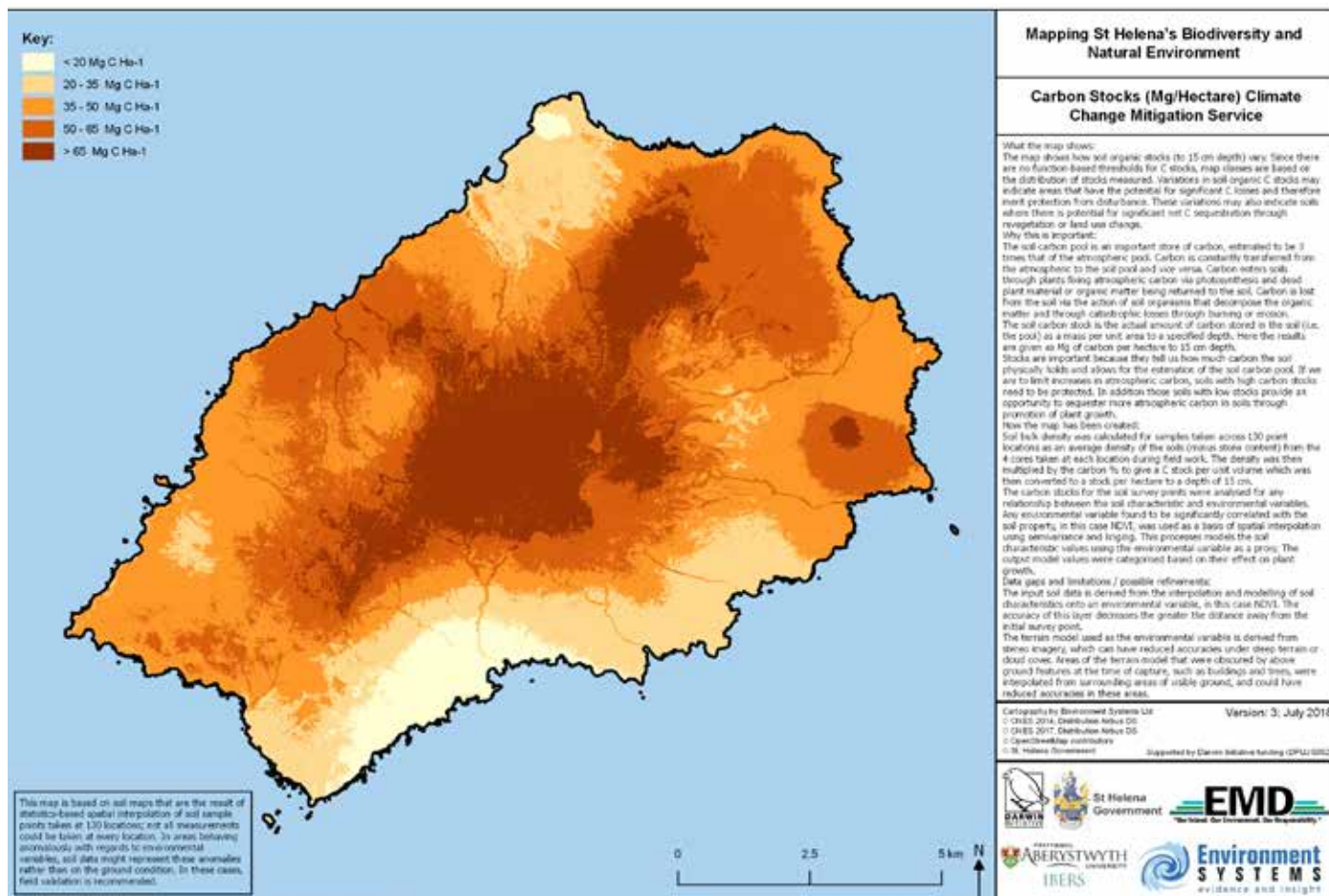


Habitat Classification Map, Credit: Samuel Pike, Environment Systems

In order to ensure that data from the project are disseminated to the public, a webGIS service was planned to be set up with the help of the SAERI IMS-GIS data centre. The project bought a server which hadn't been used to the best of its ability, and wanted to make the most of this, to enable data sharing across government departments and, therefore, facilitate access to the data.

“  
**The server, although small and contained, should be able to provide the first baseline for creating a more open system**

” For more information on project DPLUS052 please click [here](#).



Soil Carbon Stocks Map, Credit: Samuel Pike, Environment Systems



Washing coffee ensuring high quality, maximizing farmers income, Credit: Emily Garthwaite

## Mainstreaming biodiversity conservation and climate resilience at Yayu Biosphere Reserve, Ethiopia

The Yayu Reserve in Ethiopia covers 167,000 hectares and is home to around 450 higher plants, 50 mammal, 200 bird, and 20 amphibian species. In addition, it is one of the most important refuges of wild genetic resources for Arabica coffee (*Coffea arabica*). Coffee farming occurs within the forests of the buffer zone and transition areas of the reserve, generating up to 70% of the cash income for over 90% of the local population.

During the project we were able to increase the household income across 950 Yayu farming households by almost 30%, through an increase in the price paid to farmers for their coffee. The improvement in coffee prices was made possible via the conversion of low quality (and thus low value) coffee to high quality coffee, which was one of the main activities of the project. Improving household income from Yayu coffee directly associates livelihood with forest. If a forest system can support livelihoods, it has an obvious value, and a sound basis for its preservation.

Communicating effectively with stakeholders is important to the success of any project, and central to maintaining a good working relationship. Throughout the engagement process problems and issues often occur but opportunities also emerge, which if acted upon can lead to worthwhile outcomes. This was certainly the case for the Yayu project.

“ Union Coffee announced that they would donate 25p from these sales directly back into the Yayu project, to maintain coffee quality and help support sustainable cooperative management ”

Central to the success of the project was the purchase of coffee from Yayu, which now exceeds £1 million (since 2014). It was our intention to market the Yayu coffee through the online store of Union Hand-Roasted Coffee for home delivery, but we needed other means of selling the coffee. Our first major breakthrough came in 2016, when Yayu Wild Forest Coffee was accepted by Waitrose, for sale in 200 of their supermarket stores. Kew Gardens' café and visitors' shop also started selling the project coffee, and then Warwick University, identified the opportunity to sell the Yayu coffee on their campus as a 'best practice' example of sustainable coffee purchasing. Following these unexpected successes, Union Coffee announced that they would donate 25p from these sales directly back into the Yayu project, to maintain coffee quality and help support sustainable cooperative management.



“  
**The end result was the maintenance of coffee quality and a reduction in post-farm processing costs, from 30% to 10%**  
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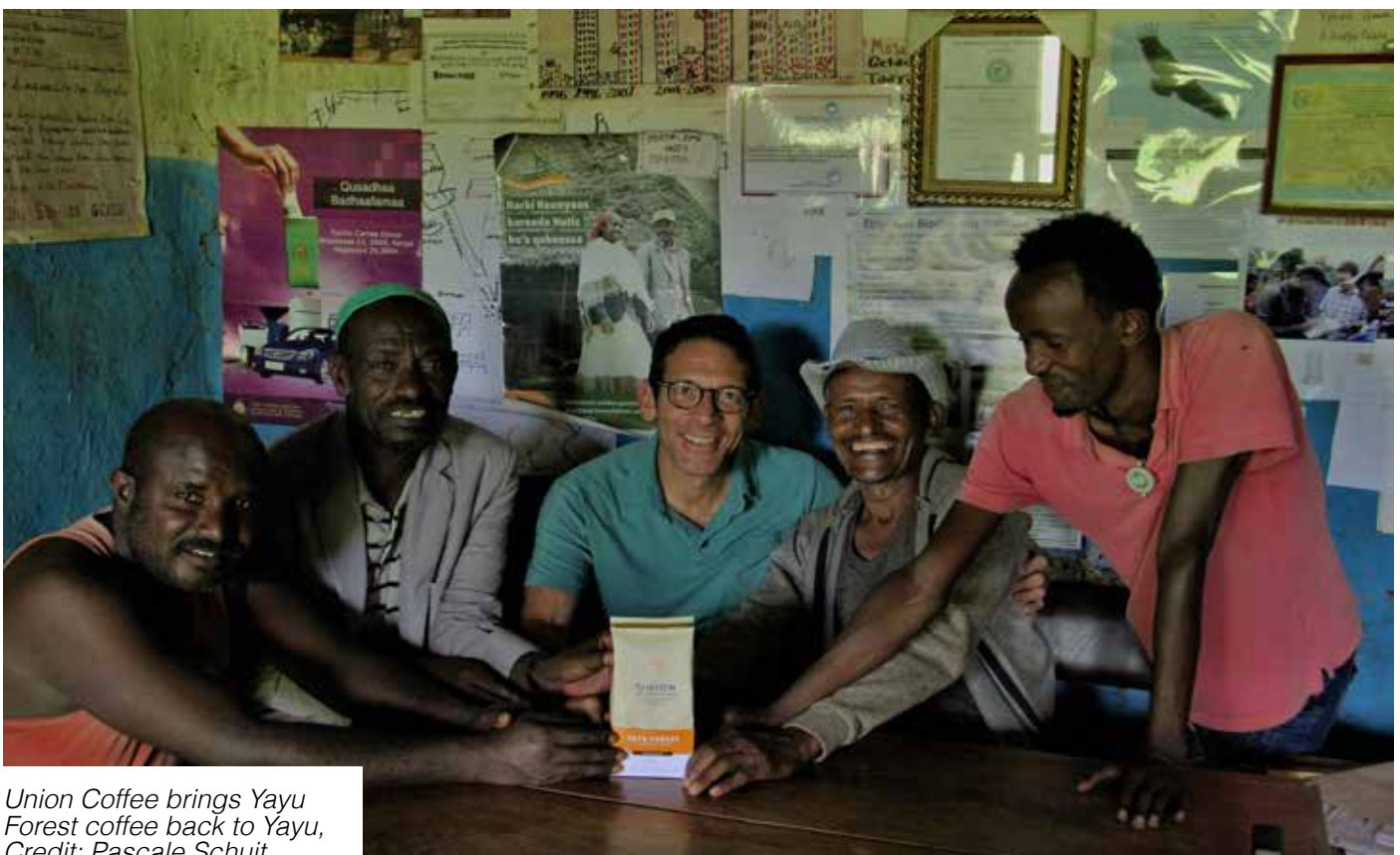
An increase in revenue is only part of the equation for sustainable livelihoods, as it is the increase in profit that leads to an increase in income. Indeed, at this moment, profitability is a key theme in coffee economics. Rising prices in fuel, labour costs and raw materials have come at a time of falling coffee prices. Our original project did not include any elements of cooperative management, as we had reason to question the relationship between the primary and secondary cooperatives; the secondary cooperatives deal with the final steps of processing, in-country transportation and export. During the course of the project the Yayu cooperatives decided to use a new secondary cooperative, with a view to reducing operating costs. Union Coffee and HiU Coffee moved swiftly and nimbly to work with the Yayu producers and the secondary cooperative to make the new arrangement work effectively. The end result was the maintenance of coffee quality and a reduction in post-farm processing costs, from 30% to 10%, thus substantially improving profitability for Yayu coffee farmers.

In mid-2018 coffee prices fell from an average of \$1.50 per lb to below \$1.00, the lowest prices for more than a decade.

At \$1.00 per lb there is no profit in coffee indeed, many farmers lose money by producing coffee. Union Coffee pays close to \$3.00 per lb for their Yayu coffee. It is this year, more than any other since the project started, that the benefits of the Union-Yayu partnership become starkly apparent.

“  
**through a re-budget of the Darwin funds, we could provide a purpose-built cupping lab at the school, which benefits from a secure and central location**  
”

The sensory part of coffee evaluation is undertaken in a cupping laboratory, and involves making and tasting numerous cups of coffee using a standard protocol. This is important for farmers because understanding quality enables them to gauge the market value of their coffee, and maintain and even improve quality. After failing to find a suitable location for the cupping lab, we realised that with a slightly larger investment, agreed through a re-budget of the Darwin funds, we could provide a purpose-built cupping lab at the school, which benefits from a secure and central location. Moreover, the children of the school could use the lab for most of the year, as it only used for cupping for no more than three months.



*Union Coffee brings Yayu Forest coffee back to Yayu, Credit: Pascale Schuit*



*Smallholder farmers are the main guardians of coffee diversity in Ethiopia, Credit: Emily Garthwaite*



*Discussions to improve coffee farmers profitability, Credit: Alan Schaller*

Thus, the cupping lab also becomes the Darwin Initiative Science Room. Construction of the lab started in 2016 and was completed in 2018. It will take another year or so to fully equip the lab, but both the coffee-growing community and the children of Wutate School are already benefitting from this new dual-purpose facility.

“ we are now seeking more funding, in order to bring drinking water and sanitation to the 2,000 schoolchildren that use Wutate School, as well as drinking water for the 8,000 villagers

”

During the project Union Coffee provided additional funds to supply the cupping lab with a fresh water supply. As a means of leveraging further benefit we are now seeking more funding, in order to bring drinking water and sanitation to the 2,000 schoolchildren that use Wutate School, as well as drinking water for the 8,000 villagers living in an around Wutate.

The part of the project dealing with climate change adaptation was not straightforward. It soon became evident that on-farm adaptation is more tightly linked to farm profitability that previously reported. In short, Yayu coffee farmers understand the measures required for adaptation but will not implement them because the cost will not bring a return on investment.

To understand this more precisely, we modified our plot experiments to look at what adaptation means in terms of improving the coffee-growing micro-climate, as well as coffee productivity and profitability. These studies have been extended beyond the duration of the project using additional funding sources, but it is already evident that we need to rethink what is possible in terms of climate change adaptation, and what so-called climate-smart agriculture actually means for coffee farmers.

From an additional broader perspective, we did not anticipate the Yayu project having any reach beyond the project area. However, ongoing work is demonstrating that our project is being used to develop strategies for upscaling our mainstreaming approach for coffee forest conservation across Ethiopia.

For more information on project 22-006 please click [here](#).



*HiU Coffee seminar on farm profitability, Credit: Jeremy Torz*



Dr Winfield discussing Akrotiri fish trapping to Prof Wright and Jodey Peyton, Credit: Kelly Martinou

## Managing mosquitoes sustainably while supporting biodiversity

Lake Akrotiri is the largest aquatic system in Cyprus. It is a Ramsar site as it is one of the very few major salt lakes within the eastern Mediterranean in semi-natural condition that exhibits a wide range of saline and freshwater influences.

The site contains many excellent examples of inland saline and freshwater wetland habitats, including permanent and seasonal saline pools, salt marsh, sand flats and freshwater marshes. It supports an impressive number of rare, vulnerable or endangered species or subspecies of plants or animals including 13 endemic and rare plant species such as *Ophrys kotschyi* and *Linum maritimum*, as well as over 32 bird species listed on Annex I of the European Birds Directive.

The area also supports many populations of plant and animal species that are important for maintaining the biological diversity of the eastern Mediterranean biogeographic region. This includes a number of endemic plant and invertebrate species which are completely dependent on the increasing rare habitat types represented within the site. The site regularly supports an internationally important overwintering population of the greater flamingo *Phoenicopterus ruber*. The lake also supports numerous species of mosquito, which are also permanent residents of the marshes and saltmarshes in Akrotiri.

The Joint Services Health Unit (JSHU) runs an integrated mosquito management programme that includes mosquito monitoring and control using environmentally friendly methods that do not harm the unique biodiversity of Akrotiri.

Thanks to funding from Darwin Plus, in April we held a three-day conference on the management and control of native and non-native disease vectors in the Eastern Mediterranean and the Middle East (EMME) as part of our project on Researching Invasive species of Kypros ([www.ris-ky.eu](http://www.ris-ky.eu)). The meeting was coordinated by the JSHU, British Forces Cyprus, the Centre of Ecology and Hydrology and the Cyprus Institute.

The 75 delegates included a number of international experts on vector management and medical entomology from across Europe and key local stakeholders.

“ The consensus of the group was that such treatments should only be undertaken as an extreme measure when public health is threatened directly by vector borne disease ”



*Dr Roy discussing biological recording with Lt. Col. Gareth Moore, Credit: Kelly Martinou*

The aim of the conference was to provide the basis for international collaboration between the Sovereign Base Area (SBA) and other parts of the world regarding sustainable control methods for native and non-native mosquitoes. All experts highlighted the need for active surveillance and data management and for the use of sustainable control methods that do not involve the routine use of chemical pesticides, which can adversely impact the environment. The consensus of the group was that such treatments should only be undertaken as an extreme measure when public health is threatened directly by vector borne disease.

This conference will provide the foundations for further research and development which will allow us to advance our current control programmes without causing long-term ecological damage.



*Elli Tzirkalli, Cyprus Butterfly Conservation talking to mosquito and medical experts, Credit: Kelly Martinou*

## “ The methods will also reduce the risk of insecticidal resistance and prevent invasive species establishment in the Akrotiri Wetlands ”

The methods will also reduce the risk of insecticidal resistance and prevent invasive species establishment in the Akrotiri Wetlands. It was fantastic to see the synergies in mosquito control programmes in the SBA with those conducted by Health Departments in Spain, Sweden and Greece. The only thing that differs is the scale of their operations.

This conference is the third of three held in Cyprus, the first conference in April 2017 was a horizon scanning exercise that concentrated upon the threats posed to the ecology of the SBA and the wider Cyprus community by the arrival of invasive, or the current presence of non-native, species be they plant life, marine life or animal. The second was around engagement in environmental monitoring held in August 2017. This event concentrated upon a specific area of interest and importance.

The reaction to this conference was fantastic. For many of the attendees this was the first time that they had met in person. One of the delegates stated that; “this is a most welcome widening of my professional family”. Such was the interest and enthusiasm that many of the workshops over ran and we had to re-convene the session in the hotel lobby in the evening!

For more information on project 22-017 please click [here](#).



Harakisa Community members tend to tomatoes in model farm, Credit: George Odera

## Unexpected achievements in the Tana River Delta

In Tana River Delta Kenya, the Darwin Initiative funded project “Balancing water services for development and biodiversity in the Tana-Delta” has achieved some unexpected results since it started in April 2017. Over the course of four years, the project aims to establish a 95,200ha multiple-use community conserved area in the delta to benefit local communities and wildlife. To achieve this, the project will promote community livelihoods to demonstrate the link between conservation and development.

One way to promote livelihoods is to support ecotourism. In its first year, the project purchased a boat engine for the Tana Delta Conservation Network (TDCN) to improve their existing boat. The network is made up of 55 community-based organisations which promote conservation and development in the Tana Delta, and TDCN uses the boat to take visitors on tours in the delta, along river channels and wetlands.

Earlier this year, most of Kenya experienced unprecedented rains and flooding and, at the height of the rainy season, 70% of the Tana Delta was under flood waters. Villages in the delta were marooned with many people in need of emergency evacuation. TDCN and local leaders agreed to use the newly-improved boat to save lives and distribute relief food to affected families – an unexpected for the ‘ecotourism’ boat!

“  
the unprecedented floods struck and swept away the entire crop

Strong links were established between Nature Kenya, TDCN and a local Member of Parliament during the humanitarian crisis. After the flood waters subsided, the Member of Parliament visited one of TDCN’s groups, Hewani Farmers’ Cooperative to donate seeds, fertilizers and pesticides as a way of indicating his support to

Nature Kenya’s initiatives. Since then, through this support, Hewani farmers have recorded a bumper harvest of lentils.

Just before the floods, the project supported a small group of women called Harakisa Community Development Project to demonstrate conservation agriculture through shade net farming of fast maturing, high value vegetables. However, due to poor engagement, the programme didn’t succeed, and the members failed to benefit. Frustrated funders, government officials and NGOs were reluctant to work with the group. However, though the Darwin project Nature Kenya saw an opportunity to support the group. By providing a drip irrigation kit, and by working closely with the group members to improve their capacity, in less than two months the women were able to develop a thriving tomato crop on their 10-acre farm. Soon, building on this success, officials from the department of agriculture started visiting the farm to train the group in greenhouse farming and other NGOs soon hailed the group’s work as a model farm.

Unfortunately, the unprecedented floods struck and swept away the entire crop but, despite this set back, Nature Kenya and Harakisa Community Development farmers did not give up. When the floods subsided, Nature Kenya purchased a second drip irrigation kit for the group. This previously excluded group now host a community learning centre and a demonstration farm and are receiving unexpected support from NGOs and local leaders who have since supported and visited the farm.

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We hope that the implementation of the project will continue bringing pleasant surprises to the implementing team.

For more information on project 24-013 please click [here](#).



*Project advisors discussing Yerba Mate cultivation with local farmers, Credit: Keith Madden*

## Learning 'yerba mate' lessons with communities in Paraguay's San Rafael Atlantic Forest Reserve

In Paraguay, 'mate' is an infusion made from the leaf of a native Atlantic Forest holly tree ('yerba mate'). Mate is drunk traditionally, at meetings and social gatherings at all times of the day. Guyra Paraguay (the national NGO and BirdLife Partner), is working with indigenous Mbya Guaraní living in the forest and settler communities around San Rafael Reserve, together with government, private sector and Darwin Initiative support, to develop a model of 'shade-grown', organic yerba mate which provides incomes, promotes tree planting on farmland at the forest edge and supports forest conservation.



*Yerba mate plant growing in San Rafael Reserve, Credit: Guyra Paraguay*

The project is implemented by Guyra Paraguay (the BirdLife Partner in Paraguay) with technical support from the BirdLife Secretariat (Global and Americas). Atlantic Forest is a highly threatened global biodiversity hotspot, home to endemic and threatened species; San Rafael (72,849 ha) is the most important remnant in Paraguay. Some unexpected achievements under the project (now in Year 3) include the following:

### Exchange of experience between private sector companies, small producers, government, researchers and students: Yerba Mate Forum

The first 'Yerba Mate Forum' in September 2017 was a great success. The project team had not realised what a unique opportunity this would represent for small producers, big yerba mate companies and government authorities in Paraguay, alongside the National Yerba Mate Institute (Argentina), to sit and chat about different aspects of cultivation, production and marketing of yerba mate. There was excellent participation of people from different regions of Paraguay. Crucially, the event was able to showcase and demonstrate to conventional ('non-shade') producers what a shade-grown yerba mate parcel looks like and how it can help to achieve conservation of forest ecosystems and biodiversity, while also contributing to local economies and sustainable development. Six BSc degree students who worked with the project as volunteers and interns (collecting data, gaining field experience with the project team and learning from the project communities) were also able to input their experience and learn from others.

## Building relationships and exchanging experience between farmer ('campesino') and indigenous communities

Training workshops, exchange visits and other project initiatives have facilitated much greater interaction between 'campesino' (settled, immigrant farmers outside San Rafael Reserve) and indigenous Mbya Guaraní (forest-dwelling) producers, who are getting to know each other better and to develop strong collaborative relationships. Indigenous and farmer communities are collaborating to achieve common goals. Their aim is to develop a joint business model to enhance incomes and improve their quality of life through production and sale of shade-grown, organic yerba mate at premium prices. One of the main lessons learned through project implementation is that, although the two communities have very different social structures, ways of working, and land and resource access rights, they have a strong mutual interest in sustainable use and conservation of a shared resource: the San Rafael Atlantic Forest in

“  
**The communities are also joining forces, with project support, to negotiate with private sector buyers and target export markets for their organic, shade-grown yerba mate**



Early morning view of Atlantic Forest, Credit: Keith Madden

Paraguay. The communities can learn from each other and share experience on producing 'shade yerba mate' in existing forest and through agroforestry development around the Reserve – planting indigenous trees on farmland to create new shade (or to replace old exotic plantations of 'Tung') - and to provide other useful future harvests. The communities are also joining forces, with project support, to negotiate with private sector buyers and target export markets for their organic, shade-grown yerba mate harvests, with a vision of creating one joint San Rafael community yerba mate enterprise.

For more information on project 23-016 please click [here](#).

”



Local producers and project staff on exchange visit, Credit: Guyra Paraguay





*St Helena has established projects on conservation of whale sharks and on to monitor one of its key threats, plastic levels and sources, Credit: Simon Morley, BAS*

## New giant Atlantic marine protected areas under threat from plastic debris

Scientists working on Darwin Initiative projects across different Atlantic Islands joined forces to try and measure the scale and impact of an emerging threat to remote environments - plastic debris. Working from the ship RRS James Clark Ross, a science team travelled from the Falkland Islands to South Georgia to Gough and Tristan da Cunha in 2013 to assess the growing natural capital of blue carbon held by marine biodiversity.

They also recorded levels of debris, mainly plastic floating in the water, stranding on the shores and on the seabed. In 2015 and 2017 these plastic surveys were extended to around Ascension Island and nearby seamounts, and expanded in 2018 across organisms in the food web as well as habitats throughout remote Atlantic environments. The increased plastic over just this five-year period were shocking.

Seventy years ago, anthropogenic impact to most remote marine environments was limited to harvesting but over the last 60 years we have become increasingly aware of a diversity of other very considerable impacts from non-indigenous species spread, habitat destruction, ozone losses, climate change and pollution. During that short period plastic waste has invaded global environments and food webs.

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Additional support was provided by Blue Marine and Pew Charitable Trusts, making a considerable effort across the five-year study but it was still a daunting task

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New research, **published in Current Biology on the 8th October 2018**, shows the extent of this issue across the Atlantic Ocean's most remote areas. To survey the shoreline, sea surface, water column and seabed as well as animals from salps (plankton) to seabirds (top predators) required a big team and diverse experts. The work was undertaken and reported by scientists across three Darwin projects, British Antarctic Survey's Official Development Assistance, CEFAS' Blue Belt work, National Geographic's Pristine Seas programme, the South Atlantic Environment Research Institute, Plymouth University, several UK Overseas Territory governments, the RSPB and The National Trust of St Helena. Additional support was provided by Blue Marine and Pew Charitable Trusts, making a considerable effort across the five-year study but it was still a daunting task.



*Plastic on St Helena shoreline,  
Credit: D K A Barnes*

Even the islands are not easy to get to, let alone the continental shelves and sea mounts around them, but of course this makes them ideal sentinels of the state of our planet and wilderness environments. Strong requirement, scientific advice, public appetite and political gain to establish key marine conservation areas has led to large areas around these remote Atlantic (and other) islands being proposed and established as Marine Protected Areas, with varying levels of restriction on activity within.

Islanders and island economies in all of these remote communities are very dependent on marine living resources, thus achieving a balanced and scientifically underpinned strategy is vital. Darwin and other projects have been established to capacity-build local stakeholders and better understand how the foodweb of these habitats work, how best to achieve sustainability, and how to monitor and mitigate threats. None of the projects initially set out to target plastic waste but it became increasingly apparent that this was no longer a problem just around industrialised North Atlantic coasts, nor even just aesthetics of shore strandlines. Baselines for the extent of plastic presence around some island beaches and sea surface had been established in the 1980s and 1990s, but the water column, seabed and foodweb had been very little explored.

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**Nearly half of inshore microplastic had been ingested or entangled in plankton and two thirds of all seabirds (including every species of the six investigated) was affected**  
”

We found that at each archipelago, plastic comprised most items stranding on the shore or observed on the sea surface. Their densities have increased a hundred-fold in two decades, to the level expected near urban environments. Pelagic net hauls recovered dense microplastics in the water close to shore and macroplastics could be seen in seabed imagery, hundreds of metres down around islands and sea-mounts. Offshore plastic was still rare to find in the water column and on these remote seabeds but we only had days to explore each location, and still found some evidence that they had reached most places. More alarmingly the 2,243 individuals we examined across 26 species of the foodweb there showed strong evidence of foodweb invasion by waste plastic. Nearly half of inshore microplastic had been ingested or entangled in plankton and two thirds of all seabirds (including every species of the six investigated) was affected.

Why does it matter if plastic becomes ubiquitous through marine environments and biodiversity? Plastic has many diverse impacts on the environment and us. These range from aesthetics of beaches, strange homes for hermit crabs and drastically expanding the habitat of sea surface dwelling organisms to the much more serious carriage of non-indigenous (pest) species, and strangling, choking and starving (by filling up stomachs) of marine wildlife and of course our marine food resources. Waste plastic also effectively absorbs persistent organic pollutants (poisons), can generate harmful microbial blooms and has recently been strongly associated with disease across the foodweb. New research has also shown that plastic degradation in marine environments leads to release of various greenhouse (climate change) gases.

“  
**Marine Protected Area designation is not enough to mitigate all threats. It is clear from our work that plastic debris is a very big problem and one we need to tackle urgently**

”  
 - Simon Morley

Growing scientific exploration and understanding of plastic waste is throwing up many novel potential solutions to clean up and destroy plastic and even produce natural (biodegradable) plastics.



*A sample of plastic debris on Ascension Island's shores, Credit: Andy Richardson, Ascension Island Government*

However, research also seems to be shedding light on ever more serious environmental issues associated with the 'miracle material'. The science team involved in the work became acutely aware that plastic was no longer a minor aside to other global problems.

The cruise leader of the 2018 expedition Simon Morley said 'Marine Protected Area designation is not enough to mitigate all threats. It is clear from our work that plastic debris is a very big problem and one we need to tackle urgently'. Leeann Henry, an islander and a marine conservationist who works for St Helena's Government emphasised that this global problem threatens not just 'paradise' seascapes, it's wildlife, iconic species such as whale sharks and turtles, but also islanders' livelihoods and the food on our plates.

Following considerable news, wildlife documentary and social media exposure there is intense public awareness, pressure and goodwill to do more to reduce, reuse and effectively recycle plastic waste. Campaigns and policy on plastic bags and other single use plastics has shown how quickly and effective action can be, but much, much more progress is needed. We need to seize this opportunity now to prevent outstanding natural wilderness become wasteland.

This article discusses research carried out during two completed projects, **EIDCF013** and **DPLUS021**, one ongoing project, **DPLUS070**, and collaboration across projects.



*Tree nursery drone shot,  
Credit: PRIMENET*

## Newsletter Contacts

### The Darwin Initiative Secretariat (Defra)

The Darwin Secretariat is based in Defra and includes Claire Millar, Fiona Charlesworth, Siriol Leach, Shaluki Perera and Mukti Mulligan

If you have any general queries about how the Darwin Initiative operates please e-mail us at [darwin@defra.gsi.gov.uk](mailto: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](mailto:darwin-applications@ltsi.co.uk) or [darwin-projects@ltsi.co.uk](mailto: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](mailto:darwin-newsletter@ltsi.co.uk)

The UK Government's Darwin Initiative aims to promote biodiversity conservation and sustainable use of resources around the world including the UK's Overseas Territories. Since 1992, the Darwin Initiative has committed over £153 million to 1,123 projects in 159 countries.