



Darwin Initiative Main Project Annual Report

Important note: To be completed with reference to the Reporting Guidance Notes for Project Leaders:

it is expected that this report will be no more than 10 pages in length, excluding annexes

Submission Deadline: 30th April 2017

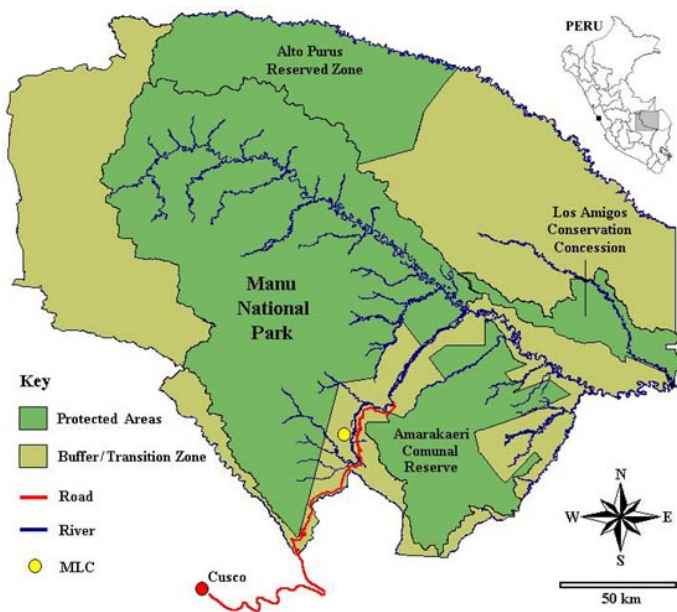
Darwin Project Information

Project reference	22-003
Project title	Sustainable Manu: biodiversity conservation through sustainable development and rainforest regeneration
Host country/ies	Peru
Contract holder institution	University of Glasgow
Partner institution(s)	Crees Foundation, Manu National Park and consortium of Peruvian and international expert partners
Darwin grant value	£289,728
Start/end dates of project	1/04/2015 to 31/03/2018
Reporting period (e.g., Apr 2016 – Mar 2017) and number (e.g., Annual Report 1, 2, 3)	Annual Report 2 (Apr 2016 – Mar 2017)
Project Leader name	Ross MacLeod
Project website/blog/Twitter	
Report author(s) and date	Ross Macleod (based on individual reports and data from lead Peruvian partner the Crees Foundation), April 2017

1. Project rationale

The world's rainforests are vital for preserving global biodiversity and maintaining essential ecosystem and economic services. Yet a widespread perception exists that there is a fundamental conflict between the desire to conserve biodiversity in healthy rainforest ecosystems and the aspirations and needs of impoverished local peoples living in and around rainforests. The Amazon rainforest and, specifically, the Manu Biosphere Reserve UNESCO World Heritage site, exemplify this major global challenge of how to both preserve biodiversity and develop sustainably. Currently, local communities in Manu are forced to financially rely on destructive practices such as logging and unsustainable agriculture. The result is an unsustainable downward spiral of environmental degradation that both reduces rainforest biodiversity and decreases long-term economic returns for local people. Furthermore, areas that have experienced significant human disturbance are perceived (by both local people and conservation managers) as having little economic or conservation value. Due to this undervaluation of their current land, people living within buffer zones around Manu are driven to further exploit and encroach on primary rainforest for economic survival. If deforestation rates are not reversed, we risk losing over 40% of the Amazon rainforest in the next 35 years.

The Sustainable Manu project is located in the Manu Biosphere Reserve, a UNESCO World Heritage Site in the Amazon rainforest of SE Peru established because of the role it plays in protecting one of the most biodiverse areas of the world. As well as having a high global



conservation value, its forests hold huge stocks of carbon, influence weather patterns, maintain water quality in the region's rivers, reduce soil erosion, flooding and landslides (that can cut regional road and communication links) and provide many jobs related to tourism across the country. Within the Manu Biosphere Reserve surrounding its core protected areas lie what are designated cultural buffer zones. These areas are the focus of the Sustainable Manu project because they are home to thousands of local people, both indigenous and settlers, who live amongst a matrix of heavily disturbed forest and land cleared for agricultural practices. As in many tropical areas, over time subsistence agriculture becomes less successful as once rich

rainforest soils deteriorate and the remaining forest that once provided additional sources of food, clean water and building materials becomes more and more distant. For many marginalised local communities, survival and the economic resources to access health, education and resources in general becomes dependent on further land clearance, illegal logging, over-harvesting of natural resources or other environmentally destructive activities such as gold mining. The result is an unsustainable downward spiral of environmental degradation and decreasing economic returns that constantly drives people and communities further into primary rainforests, damaging or destroying the globally valuable ecosystem services they provide. Once forced into colonizing these fragile rainforest environments, local communities are forced to repeat the cycle of environmental destruction and decreasing economic prospects that accompanies unsustainable human exploitation.

2. Project partnerships

The Sustainable Manu project is led by a formal partnership between the Institute of Biodiversity, Animal Health and Comparative Medicine (IBAHCM) at the University of Glasgow and the Crees Foundation, a Peruvian sustainable development and conservation research NGO (signed partnership agreement available on request). The Sustainable Manu project application was developed at the request of the Crees Foundation who lead on project delivery in Peru and provide the focus for collaboration with the other Peruvian partners. The project was designed, built and the application jointly written by staff from the University of Glasgow and Crees. The project is also delivered with the support of Manu National Park, who are the primary protected area at the core of the wider Manu Biosphere Reserve within which the project works. The National Park management and staff are one of the primary audiences for the biodiversity monitoring data being collected to provide an evidence base for establishing the conservation value of the regenerating rainforests within and around the park. Project staff work with the park management regularly in planning the biodiversity survey work, developing permit applications and sharing results. The project is also supported by a number of expert partners including La Molina National Agrarian University, Lima, Peru, Centro Binacional Peruano Norteamericano (CBPNA), Puerto Maldonado, Peru, School of Geography and the Environment, University of Oxford. These partners are not involved directly in the running of the project but instead provide sources of expertise whose advice is sought when the project encounters particular technical problems. La Molina provide advice on agro-forestry implementation, Oxford on the social-economic surveys and monitoring and CBPNA have been instrumental in the development of the environmental education approaches. With their director

Carlos Arevalo working increasingly closely with the project over year 2 to help Crees staff deliver the educational side of the programmes. The other partnership envisaged in the original application was with IESTP, a technical college in Manu, however as described in the year 1 report this partnership ended when the college decided to end its land management course as the result of local political considerations. In year 2 the key development in terms of partners has been the building of new partnerships to replace IESTP in helping deliver the natural land management, eco-tourism, entrepreneurial and environmental awareness education goals of the project. The project has now established a close working relationship with Jose Carlos Mariategui Collegio in Salvacion and in partnership with CBPNA, Crees has successfully delivered 14 workshops covering the topics listed above and has been able to reach a much wider audience than if the educational work had continued with IESTP. See section 3 for more discussion of associated activities and outputs.

Two new partnerships have been developing over the course of year 2. One with the Peruvian state agriculture development bank (Agrobanco), which has started a microfinance service in the Manu Biosphere Reserve and a series of meetings have been held to explore how the project can use the expertise and experience developed so far to support the roll out and successful implementation of this service for sustainably based business approaches across Manu and help the micro-enterprises developed during the project access this support. This partnership will be developed further in year 3 with the aim of securing continuing long term support for the development of sustainable microenterprise after the Darwin funding ends. The second new partnership is with Foncodes, a national programme of the Peruvian government's Ministry of Development. Foncodes is starting to work in Manu and has shown considerable interest in building on the Sustainable Manu project's microenterprise approaches and experience and in particular in scaling up the biograden enterprise approaches developed and tested by the project. The project has supported the development of 26 biograden microenterprises with Darwin funding and Foncodes is now exploring options for increasing this 15 fold and using the project's technical knowledge to deliver 400+ new biograden based enterprises. At the moment the partnership with Foncodes is an informal one with the project sharing expertise while a more formal agreement is being developed, which we hope to have confirmed in year 3. Securing this agreement to scale up the microenterprise initiatives started by the Sustainable Manu project would be an ideal addition to the exit strategy and help delivery of additional long term impacts from the Darwin Initiative funding. The partnership with Foncodes has already been instrumental in allowing an expansion of microenterprise participants reached through the delivery of a business development workshop (described in 3.1 below) and this will be expanded on in year 3.

3. Project progress

3.1 Progress in carrying out project Activities

Out of the 18 key project activities outlined in the logical framework, 16 activities were planned to be underway by Year 2 of the project and all of these were successfully started. The majority of these activities will continue to run through the 3 years of the project. As described in the Year 1 Annual Report one activity (delivery of a local land management course) stopped earlier than planned and has been successfully replaced with an alternative delivery approach (via land management and other workshops) that is reaching a wider audience (see activities under Output 2 below).

Output 1: Quantification of the potential for micro-enterprise to reduce unsustainable use, or exploitation of primary rainforest forest habitat.

Activities 1.1, 1.2 & 1.3 Recruitment of participants for agroforestry and other micro-enterprise initiatives. Measurement of initial use of forest by local participants and ongoing levels of sustainable and unsustainable activities and involvement with, income and welfare benefits of microenterprises.

By the end of Year 2, 179 potential participants had been recruited, 92 of whom who had successfully progressed and started receiving micro-enterprise support and 87 of whom will receive start up support in year 3. These participants who have already started represent 84%

of the planned project total and in addition to the 87 participants already recruited for year 3 we expect to be able to recruit approximately 16 further participants during the first part of year 3. Over the course of the project we should therefore be able to help support 195 micro-enterprise participants, an increase of 77% on the initial target. This increase in participants has been due to working in a newly developing partnership with Foncodes, with Foncodes recruiting many more than expected local participants who wanted to develop a wide range of different micro-enterprises and who then participated in a business development workshop programme (first run in Dec 2016) involving staff from Foncodes, Crees and other partners, which included support for each micro-enterprise to develop a simple but sustainable business plan. After evaluation for achievability 49 micro-enterprise participants were provided with support and advice on development of their micro enterprises through Foncodes.

Work supporting the participants recruited in Year 1 continues and monitoring of participants using the standardised project household survey has been rolled out to monitor income, welfare and time spent on different activities and follow up surveys will be completed in year 3 to allow changes to be measured and analysed. Initially the household monitoring started as a paper based system because of a lack of reliable access to power and internet around many locations in Manu. This has proved rather a barrier to quick analysis of the data so the project has decided to take advantage of improving internet availability and increasing availability of long battery life tablets to convert to a more electronic system. Digitisation of existing records was underway at the end of year 2 and in year 3 data will be entered directly into tablets that will then be brought back to the project office in Manu where there is wireless internet access that will allow the data to be synchronised immediately with the main office in Cusco. This should ensure we can rapidly analyse the household survey data as year 3 progresses. Additionally, the production monitoring etc developed in year 1 continues.

Output 2: Increased knowledge within the community of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic resources.

Activities 2.1 to 2.4 Development and delivery of Natural Land Management Training (2.1), Entrepreneurial Training (2.2), Training Workshops (2.3) and assessment of approaches for delivering benefits to local people of Nagoya Protocol and developments in Manu's ecotourism (2.4).

As described in the Year 1 report the local land management course that we initially intended to partner with to deliver the land management and entrepreneurial training activities closed for local political reasons so these activities are now being delivered via a series of training workshops that, as mentioned above, have enabled us to reach more members of the community. Year 2 saw the continued development and successful delivery of micro-enterprise support, land management and environmental education workshops to replace activity that would have taken place within the Land Management course. This included development and delivery of the entrepreneurial business development training workshop with Foncodes, which was held in Dec 2016 (and due to local demand is scheduled to be run again in May 2017) to support and develop simple but sustainable business plans for micro-enterprises. A further 14 workshops on biograden cultivation, composting, dealing with insect pests and crop rotation were delivered for a total of 140 participants.

Work also continued with local people, and in particular the micro-enterprise participants, to assess how they might benefit from sharing of genetic resources as envisaged under the Nagoya Protocol. After initial assessments of the varieties of crops and produce being used by participants involved in the biogardens and agroforestry and discussing with local communities possible sources of local medicinal plants the potential for local benefit has generally been assessed as disappointingly low due to the widespread use of crop varieties common across Peru and more widely. However, one source of potential interest as a genetic resource that could be developed to benefit local communities in Manu has been identified. This is the inclusion by local indigenous people of the growing of endemic fungi, fruits and vegetables as part of a type of artisanal agroforestry. Our initial assessment suggests that these could provide a unique genetic resource that could be developed through the creation of a market for these endemic foods by working with local ecotourism lodges (and potentially through an international

restaurateur in London) keen to be able to provide their visitors with a unique food experience. In Year 3 we are therefore aiming to work with 5 new potential artisanal agroforestry micro-enterprise participants on an initial proof of concept trial. This will involve identifying all the known edible fungi, fruits and vegetables that are endemic to the Manu Buffer Zone, estimating potential yield, developing culinary dishes based on the endemic resources and testing them with ecotourism visitors to the Manu Learning Centre lodge. The assessment of opportunities available via developments in Manu's ecotourism is ongoing with the final workshop and training events connected to this scheduled for Nov 2017.

Output 3 Increased participation in sustainable micro-enterprises and associated increased incomes within the local community.

Activities 3.1 to 3.4 Training initiatives and workshops on micro-enterprises and provision of technical support and materials for creation of micro-enterprises. Development of micro-finance support system for micro-enterprises and community co-operative to support agroforestry and biogarden businesses.

14 Training workshops were delivered with 140 participants, covering a wide variety of skills and knowledge needed for the participate in the development of the different micro-enterprises. (These are the same workshops mentioned under activity 2.3, the workshops are designed to contribute to both Outputs 2 & 3 by including both specific training to increase participation in microenterprise and more general training to increase community knowledge of sustainable practices, natural land management, entrepreneurial skills etc.) An additional specialist agroforestry workshop for 40 participants was also held and there were ongoing one-on-one technical support to the 11 agroforestry entrepreneurs, 20 existing and 6 new biogarden entrepreneurs. There was further start up micro-enterprise support to 49 new participants via the business development workshop and to 6 young local artisans.

The Peruvian state agriculture development bank (Agrobanco) has started a microfinance service in the Manu Biosphere Reserve and a series of meetings have been held to explore how the project can use the sustainability expertise and experience developed so far to support the role out and successful implementation of this service for sustainable business approaches across Manu and help the micro-enterprises developed during the project access this support. In year 3 our aim is support 5 new project micro-enterprise participants to apply for this micro-finance so that we can develop an ongoing support system for helping sustainable micro-enterprises achieve funding after the end of the Darwin project work.

Work continued on developing community level support for the sale of micro-enterprise products (especially from biogardens and agroforestry etc) to markets outside the Manu area. As well as regular meetings and discussions, activity included a workshop in March 2017 to explore barriers and solutions to selling products.

Output 4 Increased knowledge of biodiversity conserved through rainforest regeneration and how high priority conservation species use regenerating rainforest, shared through scientific papers and environmental education to local and international audiences.

Activity 4.1 to 4.5 Survey and data collection on regenerating rainforest biodiversity. Development of environmental education materials on biodiversity and its value in the Manu area. Biodiversity value and environmental education awareness workshops for local community and conservation managers in Manu. Talks, presentations and scientific communication of biodiversity results to local, national and international audiences. Writing of reports and scientific papers on the value of regenerating rainforest biodiversity.

Biodiversity monitoring surveys have continued for the 44 high conservation priority bird and mammal species known in the Manu area. Additionally, surveys of 7 indicator taxa (birds, mammals, amphibians, reptiles and butterflies, dung beetles and orchid bees) continue in the regenerating rainforest of 5 areas of the Manu Biosphere Reserve buffer zones and 1 control area of primary forest, representing an additional output of 2 extra regenerating rainforest areas to those originally planned. Dung beetles and orchid bee monitoring represent additional

outputs to the original application and have been chosen for their ability to indicate ecosystem services and health of rainforest environments.

A wide range of environmental and biodiversity education activities have been successfully undertaken with 260 participants in Year 2 to bring total to 430 during project so far. Year 2 activities included. The Real Forest Experience workshop program developed in Year 1 continued, aimed at teaching local students (and their teachers) about the value of biodiversity and sustainable development based on experiences while in the rainforest. A total of 60 secondary school children participated over the year. A further 4 environmental education classes were delivered at the Jose Carlos Mariategui Colegio in Salvacion to 120 students and the project participated in the Annual Banana Fair (local agricultural show) in Salvacion, with two stalls on the 2nd and 3rd of September 2016. The project delivered displays on the importance of biodiversity and conducted a public taste test to demonstrate the quality and value of local organically grown produce with ~60 local participants.

In terms of communication to wider national and international audiences a summary of Sustainable Manu's research projects, the results to date, and how this serves as a basis for environmental interpretation and education locally and globally was delivered for Peruvian Tour guides and tourism students in Cusco – 150 participants. Plus the project research results were presented to over 80 international tourists visiting our base at the Manu Learning Centre and to 3 visiting international school/University groups: Deakin University, Reaseheath College and Carolina School. Project staff have produced 6 blogs (video or written word) on current biodiversity research activities at the MLC that includes reptiles, woolly monkeys and Tree Top Manu (see Table 2 Publications).

Over the first 2 years of the project, a total of 6 scientific and conservation papers communicating new knowledge of Manu's biodiversity, biodiversity and conservation value of regenerating rainforest and new developments in biodiversity survey methods for regenerating rainforest have been submitted and published. Two papers were published in Year 1 and 4 in Year 2. A technical report, titled Tree Top Manu: Assessing Biodiversity & Conservation Value Of The Manu Biosphere has been completed for Manu National Park covering the first 18 month of biodiversity data collected across Manu's regenerating rainforests (a copy of this is provided as Appendix 4). The report details 4496 arboreal camera trap records of >25 species of medium-large terrestrial mammal and >60 species of bird, 9380 terrestrial camera trap records of >34 species of medium-large terrestrial mammal and >18 species of bird, 5465 records of 380 bird species along ornithological transects, 3346 individual butterflies of 284 species from baited traps, and 1201 records of 121 species of amphibian and reptile (this comprises 1051 records of 74 amphibian species and 150 records of 47 reptiles). Several other papers and reports on other aspects of biodiversity and its conservation are under development.

Work continued on a series of biodiversity guides (on amphibians, reptiles and butterflies, orchid bees). With a bilingual field guide to "Amphibians of the Manu Learning Centre and other areas in the Manu Region" and an information guide to Orchid Bees completed (links to copies of these are provided in Appendix 5). The materials are used as environmental education teaching aids and to enable ecotourism guides to introduce lesser known aspects of Manu's incredible biodiversity to their clients.

Output 5 Delivery of a practical, evidence-based, implementable strategy to Manu Biosphere Reserve community documenting the potential for rainforest biodiversity conservation through sustainable development linked to rainforest regeneration.

Activity 5.1 to 5.4 Collate the evidence on the conservation, sustainable development and educational gains made during the project. Write a strategy document for the Manu area outlining how rainforest regeneration and sustainable development could be used to impact biodiversity conservation. Present this strategy to the Manu conservation community, Peruvian government and future funders.

Output 5 activities are related to the delivery and sharing of the project results and are therefore mostly planned for year 3 of the project. Collation and an initial analysis of the first 18 months of

biodiversity data has been undertaken and is presented in the technical report described under Output 4 above. Initial collation from the paper based house hold survey data has also been undertaken and the monitoring system is being converted to a digital system (as described under Output 1) to ensure we can rapidly analyse the household survey data as year 3 progresses.

3.2 Progress towards project Outputs

For 3 of the indicators (1.2, 2.1 & 3.2) we are proposing fairly minor changes in wording to allow us to better track progress towards the outputs. These are detailed in the table below using track changes to indicate the proposed changes, with the explanations in the comments box. There are no Output level changes being proposed.

Output 1:	Quantification of the potential for micro-enterprise to reduce unsustainable use, or exploitation of primary rainforest forest habitat.			
	Baseline	Change recorded by 2017	Source of evidence	Comments (if any)
Indicator 1.1 The proportion of working time participants spend on sustainable activities and micro-enterprise initiatives	To be determined from analysis of house hold surveys	Household survey designed and baseline surveys undertaken to capture data so that change can be compared to baseline after final year surveys.	Sample household survey data (Appendix 6)	
Indicator 1.2 The proportion of working time participants <u>have available to</u> spend away from their own land for activities linked to unsustainable exploitation or primary rainforest.	To be determined from analysis of house hold surveys	Household survey designed and baseline surveys undertaken to capture data so that change can be compared to baseline after final year surveys.	Sample household survey data	We are proposing the indicated change in wording to alleviate participants concerns about whether sensitive survey data related to potential illegal activities might be fed back to government. We are now using measures of time spent engaged in sustainable activity at home as increasing this reduces time available for time consuming travel to exploit distant primary forest .
Output 2:	Increased knowledge within the community of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic resources.			
	Baseline	Change recorded by 2017	Source of evidence	Comments (if any)
Indicator 2.1 The number of <u>participants enrolled-attending</u> on natural land management, eco-tourism, entrepreneurial and environmental awareness <u>coursestraining</u> .	None	140 participants attending 14 training workshops on and a further 49 participants attending microenterprise development workshop.	Annex 1, and training attendance records (Appendix 7). See also report sections 3.1.	The original goal had been 60 participants receiving training through there enrolment on a local land management course. The change to delivering training through workshops has allowed much wider sharing of the same knowledge and more directly targets members of the community actively engaged in microenterprise so the modified wording proposed for this indicator seems a better way of measuring and achieving the planned output.
Indicator 2.2 2. The knowledge of	To be determined	Household survey designed and	Annex 1 & sample	

local participants of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic resources.	from analysis of house hold surveys	baseline surveys undertaken to capture data so that change can be compared to baseline after final year surveys.	house hold survey data. See report section 3.1	
Indicator 2.3 Creation of micro-enterprise initiatives using knowledge and skills delivered by project training initiatives.	No micro-enterprise participants	Microenterprise initiatives started by 92 participants receiving knowledge and skills training	Annex 1, & participant records (Appendix 8) plus see section 3.1 of report.	
Output 3:	Increased participation in sustainable micro-enterprises and associated increased incomes within the local community.			
	Baseline	Change recorded by 2017	Source of evidence	Comments (if any)
Indicator 3.1 The number of people benefitting from the micro-enterprise initiatives.	No micro-enterprise beneficiaries	By the end of the second year there an estimated 428 people directly benefitting from the micro-enterprise initiatives. Based on an initial calculation of an average 4.66 people per household, which will be refined based on the final household survey data.	Annex 1 & sample house hold survey data.	
Indicator 3.2 The number of agroforestry plots, biogardens and micro-enterprise participants .	No micro-enterprise participants	26 Biogarden enterprises, 11 agro forestry enterprises and 55 other micro-enterprise participants to give 92 in total.	Annex 1 & participant records (appendix provided to Year 1 report) plus see section 3.1 of report.	In the original planning we had assumed that micro-enterprise participants would be sole traders so we used numbers of businesses and number of participants interchangeably. This has been true for the biogarden and agro-forestry micro-enterprises. For some of the other microenterprises project participants are currently choosing to work in partnerships with each other when this makes business sense. To get an accurate measure of participation in micro-enterprise for Output 3 we are therefore reporting numbers of participants involved in running micro-enterprises. In any cases where someone were to be employed by a micro-enterprise partnership they would be counted as a beneficiary (Indicator 3.1) rather than a participant (3.2).
Indicator 3.3 Income generated	0	Household survey designed and	Annex 1 & sample	

through sales of produce etc through the local Manu Cooperative that the project helps set up		baseline surveys undertaken to capture data so that change can be compared to baseline after final year surveys.	house hold survey data.	
Output 4:	Increased knowledge of biodiversity conserved through rainforest regeneration and how high priority conservation species use regenerating rainforest, shared through scientific papers and environmental education to local and international audiences.			
	Baseline	Change recorded by 2017	Source of evidence	Comments (if any)
Indicator 4.1 The number of high conservation priority species and amount of biodiversity found in regenerating rainforest	No data for project period	20,888 records of 819 species collected during biodiversity monitoring surveys undertaken for the 44 high conservation priority bird and mammal species known in the Manu area and surveys of 7 indicator taxa (birds, mammals, amphibians, reptiles and butterflies, dung beetles and orchid bees) in the regenerating rainforest of 5 areas of the Manu Biosphere Reserve buffer zones	Annex 1 and interim biodiversity technical report (Appendix 4)	
Indicator 4.2 The number of participants involved in environmental and biodiversity education courses and activities and the knowledge they display afterwards.	None	A wide range of environmental and biodiversity education activities have been successfully undertaken with 260 participants in Year 2 to bring total to 430 during project so far. Multiple materials, including bi-lingual materials, produced. Multiple educational and training events produced (see section 3.1 for details).	Annex 1 & participant records plus see section 3.1 of report.	
Indicator 4.3 The number of submitted and published papers, reports and other educational resources produced as a result of biodiversity	None	6 papers published and a range of other educational materials produced. Two identification guides for Manu's biodiversity have been completed and 2 more in the process of being	Annex 1 plus interim biodiversity technical plus see report section 3.1 and list in Annex 2	

monitoring.		written. An interim technical report on the biodiversity of the Manu Biosphere's regenerating rainforest biodiversity was completed for the national park.	Table 2	
Output 5:	Delivery of a practical, evidence-based, implementable strategy to Manu Biosphere Reserve community documenting the potential for rainforest biodiversity conservation through sustainable development linked to rainforest regeneration.			
	Baseline	Change recorded by 2017	Source of evidence	Comments (if any)
Indicator 5.1 Completion and submission to conservation decision makers in Manu and Peru of a written strategy for integrated biodiversity and sustainable development around the Manu Biosphere Reserve	Evidence, data and strategy don't exist	N/A		Due in final 3 months of project
Indicator 5.2 Presentation of project results to conservation managers and decision makers	None	N/A		Due in final 3 months of project

3.3 Progress towards the project Outcome

Outcome: Demonstrate to the conservation community how rainforest regeneration can deliver high-priority biodiversity conservation and enhanced livelihoods for communities currently dependent on unsustainable exploitation of rainforest habitat in Manu Biosphere Reserve.

The Sustainable Manu project will need to complete 3 phases to achieve the above outcome; 1) initiation of the activities needed to collect evidence of how regenerating rainforest ecosystems can deliver conservation value and improved sustainable livelihoods, 2) monitoring and documenting the effects and results of the activities and 3) Sharing and communication of evidence based knowledge to the stakeholders and conservation community of the Manu area.

By the end of Year 2 the project had initiated all the planned activities for generating evidence (as described in section 3.1) and is delivering on the monitoring and documentation of the effects. The project has also started sharing and communicating evidence based knowledge and skills across the Manu area and to national and international audiences. Year 3 will see the completion of the analysis of the data from monitoring and documenting effects and will be the main period for communicating the results to the widest possible stakeholder and conservation audiences.

Based on the assessment of indicators described below and the highlighted sources of evidence the project is on course (and for the biodiversity data collection slightly ahead of schedule) to deliver the intended project outcome by the end of the project of demonstrating to the conservation community (in the widest sense) the value of regenerating rainforest ecosystems for conservation and sustainable development in Manu and for rainforests in general.

Indicator 1: The number and relative abundance of species of high biodiversity conservation priority, and the species richness of other indicator biodiversity, using and relying on regenerating rainforest.

Biodiversity monitoring surveys are ahead of schedule and moving towards completion, with the 44 high conservation priority species in the Manu area and 7 indicator taxa (birds, mammals, amphibians, reptiles and butterflies, dung beetles and orchid bees) being monitored across 5 regenerating rainforest areas of the Manu Biosphere Reserve. The project is thus on track to exceed the original target of monitoring 5 biodiversity indicator groups across 3 areas. The baseline for this indicator was no regular biodiversity monitoring in 4 out of the 5 regenerating forest areas before the project started and it is unlikely long term biodiversity monitoring covering a wide range of indicator taxa would have continued at the 5th site without the project. So far 20,888 new biodiversity records have been collected during the project, representing 819 identified bird, mammal, amphibian, reptile and butterfly species (see Treet Top Manu Technical Report in appendix for evidence). Dung beetle and orchid bee biodiversity data collection is complete and analysis of patterns revealed by these indicators is on track for completion by the end of 2017. The final season of biodiversity data collection based on camera traps and field surveys is currently underway with data collection on schedule for completion by November 2017 and biodiversity analysis on schedule for completion by January 2018.

Indicator 2: The type and number of rainforest regeneration and sustainable micro-enterprise initiatives successfully initiated by participants trained during the project.

A further 61 sustainable micro-enterprises were initiated by project participants in Year 2 bringing the total at end of Year 2 to 92 (83%) out of the planned total of 110 for the project. Agroforestry, biogradens and sales of local artisanal products are the most frequent enterprises but in total 19 different forms of micro-enterprises have been supported. The variety of types of micro-enterprises that local participants have sought support for developing has surprised us. In the initial application we had selected 3 types of enterprise to focus on in Year 1 (agroforestry, biogardens and ecotourism guiding) and hoped to encourage community engagement and involvement by adding support for 3 further community selected enterprise types. We have responded to the wide variety of community ideas by engaging in flexible micro-enterprise support activities such as help for development of business ideas and the development of simple business plans to provide participants with support for assessing what micro-enterprise ideas are most likely to succeed. The most encouraging aspect of this part of the project has been the demonstration that there are a lot of potential activities for people in Manu to earn incomes from that don't rely on unsustainable destruction of primary rainforest habitat. The base line for this indicator was that the micro-enterprises didn't exist in a formal sense at the start of the project. The participants were often involved in some sort of allied activity that provided them with the skills to set up a sustainable micro-enterprise but the actual activity being supported didn't exist as a functioning business. For example, the agro-forestry participants often already farmed bananas but using methods that required clearing new land every 3 or 4 years and weren't already making a living from agro-forestry where the same land is maintained for farming long term and builds up a canopy of trees.

Indicator 3: The proportion of time participants spend involved in new sustainable micro-enterprise activities, compared to time available to spend exploiting surrounding primary rainforest habitat.

Based on the reluctance of participants to have potentially illegal activity related to use of primary forest habitat recorded we have slightly changed the wording of this indicator. We now, instead of recording illegal activity directly intend to focus on analysing how much time participants involved in sustainable micro-enterprises would have **available** for exploiting primary forest habitat. We expect to be able to show if micro-enterprises take up an increased proportion of time and generate alternative incomes that would reduce attractiveness of alternatives based on exploiting often distant primary forests (such as logging or commercial hunting), which require unattractively long, difficult and dangerous periods away from families and homes. The household survey that will be used to document the extent of involvement in the micro-enterprises and their impacts has been successfully implemented and is ongoing. During year 3 we will be able to analyse the results to quantify impacts of micro-enterprise activities. The baseline data for this indicator is the initial house surveys the results of which will

be compared to the final surveys. An example of the household survey data is provided as evidence in the appendix 6. As mentioned in 3.1 we are in the process of digitising the household survey data so there are still more surveys to be added to this but it gives an example of the data being collected.

Indicator 4: The number of people directly benefiting from each micro-enterprise initiative and the amount by which income changes for each participant.

Initial household survey analysis shows on average a 4.66 family size of participants so with 92 micro-enterprises initiated this leads to an estimated 428 likely direct beneficiaries (77% of the way towards the planned total for the project of 550 direct beneficiaries). This will be quantified in more detail during the final rounds of the household survey programme during year 3. As average family size of participants is slightly lower than the 5 family members assumed at the start of the project, we aim to increase the number of enterprises supported to 118 (see 3.1 for details) to help reach the target of 550 direct beneficiaries (defined as micro-enterprise participants and their family members).

3.4 Monitoring of assumptions

Outcome Level Assumptions

Assumption 1: Local community and conservation managers remain receptive to micro-enterprise approaches, to combining conservation and sustainable development goals and to project staff. Project staff and the local partner have been working in the Manu area for many years so are well versed in monitoring the local political temperature and diffusing potential difficulties.

As for year 1 in general, the local communities remain receptive. The initial sensitivity to the pilot household surveys (because some householders were concerned about data being collected on activities of questionable compliance with local or national regulations flowing back to government organisations) has been addressed successfully by spending additional time redeveloping the household questionnaires so that information being sought is of a less sensitive nature.

Assumption 2: Peru is a country where earthquakes and landslides occur regularly and these can close roads and cut transport links. An important assumption is therefore that natural disasters don't impede access to the project area for lengthy periods (many weeks). The project can't control natural disasters but can easily monitor road closures etc and as most project staff will spend most of their time in the project area it should be possible to adapt fairly quickly to such unpredictable events.

No issues so far with natural disasters blocking access roads.

Assumption 3: Major national or international political instability doesn't cut transport links. Peru is also a country where road blockades are a normal part of the political landscape and major international events such as 9/11 have in the past reduced transport availability. Again these are situations that can be monitored readily and staff have experience in adapting to such situations.

No major political instability issues have been encountered.

Output Level Assumptions

Assumption 1 The majority of local participants involved in micro-enterprise activities remain engaged with activities. Project staff will have regular contact with participants throughout the project so can monitor for any evidence of reducing engagement and so offer support to help participants through difficulties.

As mentioned under activities this assumption has held true.

Assumption 2 Biodiversity survey sites remain accessible during the project and are not inaccessible because of local political difficulties. Accessibility of sites can be easily monitored and project staff will keep in regular contact with local communities.

This assumption is also holding true and barring any last minute changes before the final site visits in October this seems unlikely to change before the end of data collection.

Assumption 3 Technical Institute management does not change and remains engaged with development of curriculum. The project is supported by the Peruvian Ministry of Education as well as within the institute so abrupt changes don't currently seem likely.

As discussed in the Year 1 report this assumption didn't hold true as local politics resulted in a change in management and courses being delivered at the Technical Institute which lead to the project stopping working directly through with the institute. As outlined in Year 1 the project is now working with other educational bodies in Manu particularly the Colegio José Carlos Mariátegui in Salvacion and delivering planned course content directly through workshops and training activities hosted at the Manu Learning Centre and in Salvacion. This has provided a much more stable position during year 2, which we expect to continue to the end of the project and beyond.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

The impact that is project is intending to help achieve is to "Determine the value of rainforest regeneration for catalysing biodiversity conservation and sustainable development in human-use zones of Manu Biosphere Reserve, so validating a widely applicable, collaborative solution to biodiversity loss."

With the extensive collection of new biodiversity inventory and monitoring data (more than 20,000 records so far) from across regenerating rainforest in human use zones of the Manu Biosphere Reserve, we are on course for establishing and sharing the evidence needed to allow a reassessment of the biodiversity conservation value of regenerating rainforest in Manu and more widely. Similarly, after supporting the initiation of 92 sustainable micro-enterprise participants so far we will be in a strong position, by the end of the project, to assess and determine the value of approaches supporting rainforest regeneration for sustainable development in Manu and in rainforest areas more generally. Building on this information, the project aims to change how the Manu (& global) conservation community thinks about regenerating rainforest areas with a view to demonstrating that these can be sensitively developed using economically sustainable enterprises (involving biogardens, agroforestry etc), which also support the recovery of biodiversity. Demonstrating the potential economic benefits of these regenerating areas provides a route to reducing pressure to further degrade pristine forest.

While the project is not specifically targeted at alleviating poverty, the economic model of the sustainable enterprises is expected to increase the income of local households.

4. Contribution to the Global Goals for Sustainable Development (SDGs)

This DEFRA funded Darwin project does not include a formal goal to contribute to SDGs. However, the project contributes to SDG 2 by promoting sustainable agriculture and SDG 8 by promoting sustainable economic growth. In year 2 this was represented by the ongoing support of 26 biogarden micro-enterprises and 11 agroforestry enterprises plus support for a further 55 micro-enterprise participants.

5. Project support to the Conventions, Treaties or Agreements

The evidence on the conservation and biodiversity value of regenerating rainforest being collected in Manu is being used to increase the understanding and perceived value of biodiversity and regenerating rainforest and its protection in the Manu Biosphere Reserve UNESCO World Heritage site, Peru (Convention on Biodiversity – CBD – Articles 1 & 8). The project provides an additional route for Amazonian biodiversity protection (CBD Articles 5 & 6) by demonstrating the economic benefit of using regenerating forest which, through the empowerment of the community and provision of long term support for sustainable livelihoods, also supports the CBD (Article 10). The enhancement of relevant educational resources, the creation of entrepreneurial micro-enterprise based on sustainability and the provision of

enriched economic opportunities will incentivise conservation by those who rely on it directly (CBD Article 11).

6. Project support to poverty alleviation

Although the project is focussed on sustainable use of ecosystems rather than directly on poverty alleviation, it will assist in reducing poverty through enhancement of the education system and provision of resources to develop economically sustainable biogarden and agroforestry enterprises. In addition, biogardens, which are typically run by women, will provide income directly to families and empowerment for local women as well as providing a source of food. Finally, the microenterprises produce handcrafts and tourist goods, and an agreement with a market for such goods has been concluded by the project.

7. Project support to gender equality issues

While the project is not targeted specifically on gender equity issues, the general culturally driven differentiation between biogardens being run by women and agroforestry plots by men, meant that the project was designed to ensure it had an impact across gender, promoting support to the family and poverty alleviation. Participation and leadership in sustainable microenterprise by woman can provide a route out of poverty and dependency and we therefore closely monitor participation rates to ensure woman as well as men are applying for and taking part in project training opportunities and leading microenterprise. Based on the project participation records, and in line with expectations due to traditional cultural gender roles and land ownership patterns, 80% of the biogarden microenterprise participants are women and 91% of agroforestry microenterprise participants are male. It has actually been pleasing that the project has managed to recruit male and female participants for both types of enterprise so that there can be future roles models for both genders. At the start of the project it was far from certain that this would be practical but with project staff making a positive effort to talk to and encourage potentially underrepresented groups we are at least able to demonstrate there are opportunities for both genders in either type of microenterprise and we expect this will have a positive gender equality impact over the longer term. In the other more general microenterprise development initiatives, where we were starting with less traditional gender differentiation of roles, 60% of recruited participants are female and 40% male so we are successfully reaching across gender and helping create opportunities that over the longer term should help reduce gender inequalities by creating routes to economic independence for both genders.

8. Monitoring and evaluation

Monitoring of the biodiversity outcomes and outputs (Outcome indicator 1) is carried out through the project GIS database containing all biodiversity distribution and abundance data collected during the project. The results of each individual monitoring survey are entered into the database immediately after collection and the Biodiversity Field Team Leader and the Biodiversity Monitoring Coordinator, then use the database to produce monthly reports on the biodiversity recorded by the project. As part of the monitoring and evaluation process an interim technical report on the biodiversity of regenerating rainforest in Manu was produced in year 2 and this has confirmed the important environmental and conservation role that regenerating areas can play around Manu with 819 identified bird, mammal, amphibian, reptile and butterfly species recorded so far (see Tree Top Manu Technical Report in Appendix 4).

The key means of monitoring the micro-enterprise results (Outcome indicators 2, 3 & 4) is through the use of household surveys of the participants being supported by the project. The project Education and Entrepreneurship Officer, is responsible for overseeing the monitoring of the households. In the first year the household surveys had provided an interesting learning curve for the project about local concerns that data might in some way be seen by the authorities. This was overcome in the first year and the project now has a household survey design that is acceptable to the participants so that there is a standard baseline against which to quantify project outcomes. Since we are most interested in monitoring change and impact over

the course of the project most of the formal analysis of the monitoring information is scheduled for year 3 once the final round of household surveys are complete. Preliminary exploratory analysis have however highlighted some interesting results, including that despite participants visiting forest on average 3.7 times a month (mostly for medicines, fire wood and construction materials) participants generally don't see regenerating rainforest forest as important for anything (median answer 1 for all associated questions on a scale of 1 to 5 with 1 lowest importance), they see forest as dangerous (median answer 3) and they generally feel they know quite a lot about the forest (median answer 2, where 3 is highest). It will be interesting to see how results at the end of the project compare. Another useful finding from initial analysis has been that average family size of participants is slightly lower than the 5 family members assumed at the start of the project, and this finding has allowed us to aim to increase the number of enterprises supported to 118 to help the project keep on track for reaching the goal of 550 direct beneficiaries (defined as micro-enterprise participants and their family members). As already discussed in section 3 of this report we are increasingly moving to digital means of recording the monitoring information as this will provide quicker access and evaluation of the monitoring data.

The formal household surveys are supplemented by visual inspection of agroforestry plots, biogardens, etc. by project staff and participants. These informal inspections occur several times a year, with frequency depending on individual need for support and stage within the project. Assessment of progress towards indicators is therefore designed not just to be assessed by project staff but to be an activity that participants perform to help maximise their income gains and learning and to allow them (and the project) to adapt as lessons are learned or difficulties identified.

9. Lessons learnt

Most of the more specific lessons and responses are outlined in other sections of this report, in particular in section 3. At a more general level the biggest lesson learned has been about the importance of strong in country local partners with staff permanently based in the project area. Having these strength has allowed the project to continue to be delivered during the project leader's prolonged illness (see section 11 for details). With the project leader ill and very restricted in activity for 18 months it would have been impossible for the project to be continued if the original project ideas and application had not been develop and designed with the in-country partners. Increased use of digital technologies, rather than relying on paper based data collection for project monitoring, has also been a significant factor in enabling communication when the project leader couldn't be in country.

10. Actions taken in response to previous reviews (if applicable)

The issues in the table below were raised in last year's report and have all been acted on as described below or as detailed in the other sections of this report noted below.

No.	Comment	Discuss with Darwin	Next half year report	Next Annual Report	No response needed
1	Please comment directly on how the project team managed project delivery whilst PL wasn't as closely involved with the project, and whether or not it might influence overall achievement of project outcome.			x	
2	Complete report section on sustainability and legacy.			x	
3	Include additional examples of primary evidence to support project's report of progress.			x	
4	Consider translating some project outputs into Quechua or other local languages.				x
5	Track and report on both output and outcome level assumptions.			x	
6	With loss of IESTP as project partner, has the £54,600 secured matched funding from this organisation indicated in the application form been lost?			x	
7	Revise logframe to reflect changes to partnerships with Peruvian educational institutions.				x

Responses

1. See section 11 in this report for discussion
2. Completed section 12 in this report
3. Much more extensive evidence provided this year (see appendixes of this report)
4. Quechua, which is spoken by the colonial communities from the Andes and the various indigenous languages of the Amazon are wide spread spoken languages and we have a cross-section of staff who speak these languages as well as Spanish. However, in the local communities we work with, Spanish is virtually always the only written language that can be read so we use it as the most accessible language for written outputs.
5. Both output and outcome level assumptions are reported on in this report.
6. Loss of the IESTP as a project partner has meant the loss of the majority of their in-kind matched funding (made up of IESTP staff time). However, the addition of the new partnerships and in particular working with Foncodes mean that IESTP in-kind matched funding is being replaced by others and in addition further financial support has been made available by the TJMF Foundation in Year 1 & 2 so over the course of the project no net loss is expected.
7. The revisions to the logframe work are below the output and outcome levels and are included in Appendix 1 using track changes to show the changes in wording adopted for the 3 indicators where we think modification is appropriate.

11. Other comments on progress not covered elsewhere

The project leader's illness (complications from a parasitic infection picked up in Manu during the first year of the project) made project management considerably more difficult than envisaged at the end of year 1 and throughout year 2. It has been dealt with by handing over most of the day to day management tasks to staff in Peru, while the project leader has focused on providing scientific expertise and support for the design and delivery of project activities via skype. It had been envisaged in the original project planning that there would be a gradual handing over of management responsibility from the UK partner to Crees, the main Peruvian delivery partner, with the project leader moving in to a mentoring and support role to promote capacity building in Peru. The actual handing over was much more abrupt and less planned

than would have been desirable but ultimately it has been successful so it isn't expected the project leader's illness will prevent achieving the project output or outcome. The parts of the project that have been most impacted have been the project reporting and the project leader's inability to visit Manu. Glasgow University provided considerable additional help in terms of support from other project managers to write the year 1 report and while writing the year 2 report but these have been very delayed for which we apologise and thank the staff who manage the Darwin Initiative for their support during what has been a difficult period. Currently, the project leader although not completely recovered is back at work and able to oversee project progress. Return to full fitness is expected by the end of 2017 and this would be in time to allow travel to Peru again during the final 3 months of the project to help deliver the final strategic outcomes and communication of the project results. Even if recovery is slower than expected it would still be possible to help deliver the final project outcomes and communication of results via a digital presence rather than in person so this isn't seen as a risk to project delivery.

12. Sustainability and legacy

The world's rainforests are vital for preserving global biodiversity and maintaining essential ecosystem and economic services. Yet a widespread perception exists that there is a fundamental conflict between the desire to conserve biodiversity in healthy rainforest ecosystems and the aspirations and needs of impoverished local peoples living in and around rainforests. The overall legacy that the Sustainable Manu project is seeking to generate is a robust evidence base that demonstrates both that it is possible to deliver high-priority biodiversity conservation in combination with enhanced livelihoods for communities, and demonstrates practical ways microenterprise approaches to sustainable development can help achieve this in Manu. By working with local people we have already been able to demonstrate that there is widespread local interest in Manu in the sustainable microenterprise approach and to demonstrate how microenterprise support can be delivered in practice and these demonstrations have been attracting national government interest in Peru. As discussed in the partnership section of this report, during year 2, the biogardens and agroforestry microenterprise approaches implemented in year 1 have already attracted the attention of two Peruvian government bodies (Agrobanco, the Peruvian state agriculture development bank and Foncodes, a national development programme of the Peruvian government's Ministry of Development) who are interested in supporting scaling up of the approaches the Sustainable Manu project has been able to demonstrate. The demonstration project approach that we are using the Darwin Initiative funding to implement is therefore already reaching national audiences in Peru and by delivering the key legacies outlined below will be able to do so long after the Darwin Initiative project funding ends.

The project aims to achieve 5 key legacies, progress towards which are assessed below

- 1) Legacy: A scientifically robust evidence base that establishes the importance of regenerating rainforest for conservation.

Progress: With more than 20,000 new biodiversity records of 812 species collected by Tree Top Manu (Sustainable Manu's biodiversity survey programme), the project has already established a substantial new evidence base for demonstrating the previously unrecognised value of regeneration rainforest for biodiversity conservation both in Manu and globally. With the addition of the final field season of biodiversity data collection in year 3 this legacy will be achieved and will enable informed conservation decision making on regeneration rainforest conservation for many years after the project ends.

- 2) Legacy: Inclusion of data from regenerating rainforest on the abundance of 5 key mammal conservation targets in the Manu National Park monitoring programme (Spider Monkey, Woolly Monkey, Jaguar, Tapir and Peccary). As this monitoring plan is a central management tool for determining and implementing conservation in Manu, addition of biodiversity data from regenerating rainforest allows these areas to be considered in Manu's conservation planning.

Progress: With data collected using Sustainable Manu's ground breaking combined arboreal and terrestrial camera trapping approaches we have been able to collect data

on the abundance of all 5 of these key conservation species and we in year 2 we have started to analyse the factors that predict the distribution of these species in regenerating forest, a key requirement for their effective conservation.

- 3) Legacy: Development of 110 micro-enterprise initiatives based on agro-forestry and other sustainable uses of existing cleared land, or new skills so demonstrating sustainable alternatives to the current unsustainable pressure on primary forest that threatens Manu's biodiversity.

Progress: With the support for 92 sustainable microenterprises so far the project is well on target to achieve a legacy that demonstrates that new land doesn't need to be cleared to sustain income levels around Manu.

- 4) Legacy: Creation of environmental education and microenterprise skills training approaches and training resources that will have continuing benefit local people long past the end of the project.

Progress: This was originally planned to be delivered through a local technical institute but as discussed earlier is now being delivered through a variety of partnerships and having developed the materials and approaches these will be able to continue being delivered by the project partners long term after Darwin Initiative funding ends.

- 5) Legacy: Creation of a strategy for scaling up integrated sustainable development and biodiversity conservation so that it can be applied across Manu to allow the benefits demonstrated by the legacies above to be multiplied and delivered throughout across 915 km² of the Manu Biosphere Reserve buffer zones.

Progress: As the collection of the demonstration data comes to an end during year 3 a written strategy based on the evidence collected will be prepared by the project partners but as mentioned above there is already considerable national interest in scaling up the activities the project has demonstrated.

The project's exit strategy as detailed in the original application therefore continues on track. One of the significant aspects of this project is that it is Stage 2 of a larger, longer-term 3-stage initiative. Delivery of the above Stage 2 project legacies will allow the project partners to work together with Peruvian government organisations to apply for large scale follow-on funding for Stage 3. With the goal of implementing integrated sustainable development and biodiversity conservation throughout the Manu buffer zones to provide a secure future for both local people and Manu's globally important biodiversity across the whole 18,811 km² region.

13. Darwin identity

The Darwin Initiative is recognised and publicized as the key funder of the sustainable Manu work on the Crees Manu Foundation website (<https://www.crees-manu.org/manu-national-park-threats-rainforest-reborn-saving-biodiverse-place-earth>) and the Darwin Initiative logo and name are used on all the key reports, educational resources and other materials produced. Examples of how the Darwin Initiative logo and identity are publicised can be seen in the Tree Top Manu Technical report on Manu's regeneration rainforest biodiversity in the appendices of this report and in the Amphibians of the Manu Learning Centre educational guide (<https://view.joomag.com/field-guide-amphibians-of-manu-field-guide-amphibians-of-manu/0570162001483967388?short> e.g. pages 281, 280 & 6) There is no specific project website (though it is referenced at: http://www.gla.ac.uk/researchinstitutes/bahcm/internationalisation/southamerica/research/ecology/headline_412857_en.html) . Both Crees Manu and UG have twitter feeds that cover project results, but these are not specifically related to the project. The various blogs and videos from the project used to publicise specific project findings on Manu's biodiversity and the other project work also publicise the Darwin Initiative name/logo (for specific examples see <https://www.naturetl.com/camera-traps-rainforest-canopy-capture-incredible-wildlife/>, <https://www.youtube.com/watch?v=BibobZMTmIU>).

14. Project expenditure

Overall project expenditure has been in line with the original application budget but due the project leader's illness Table 1 breaking down the expenditure by Darwin budget categories has been delayed and is being prepared and submitted separately so as not to further delay submission of this report.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017

Any proposed changes in the Logical Framework text have been highlighted using track changes

Project summary	Measurable Indicators	Progress and Achievements April 2016 - March 2017	Actions required/planned for next period
<p>Impact</p> <p>Determine the value of rainforest regeneration for catalysing biodiversity conservation and sustainable development in human-use zones of Manu Biosphere Reserve, so validating a widely applicable, collaborative solution to biodiversity loss.</p>			
<p>Outcome Demonstrate to the conservation community how rainforest regeneration can deliver high-priority biodiversity conservation and enhanced livelihoods for communities currently dependent on unsustainable exploitation of rainforest habitat in Manu Biosphere Reserve.</p>	<p>1. The number and relative abundance of species of high biodiversity conservation priority, and the species richness of other indicator biodiversity, using and relying on regenerating rainforest.</p> <p>2. The type and number of rainforest regeneration and sustainable micro-enterprise initiatives successfully initiated by participants trained during the project.</p>	<p>1. Biodiversity monitoring surveys are ahead of schedule and moving towards completion, with the 44 high conservation priority species in the Manu area and 7 indicator taxa (birds, mammals, amphibians, reptiles and butterflies, dung beetles and orchid bees) being monitored across 5 areas of the Manu Biosphere Reserve.. 20,888 records of 819 species have so far been collected</p> <p>2. A further 61 sustainable micro-enterprises have been initiated by participants bring the total at end of Year 2 to 92 (84%) out of the planned total of 110 for the project. Agroforestry, biogradens and sales of local artisanal products are the most</p>	<p>1. Finish final round of biodiversity monitoring visits and surveys across the regenerating rainforest of the Manu Biosphere Reserve buffer zones then report on results to conservation community</p> <p>2. Support of the existing initiatives will continue and support for initiation of 15 new agroforestry, 6 new biogradens and 14 other micro enterprises is planned for year 3 so we aim to have supported 118 micro-enterprise</p>

	<p>3. The proportion of time participants spend involved in new sustainable micro-enterprise activities, compared to time spent exploiting surrounding primary rainforest habitat.</p> <p>4. The number of people directly benefiting from each micro-enterprise initiative and the amount by which income changes for each participant.</p>	<p>frequent enterprises but in total 19 different forms of micro-enterprises have been supported.</p> <p>3. The household survey that will be used to document the extent of involvement in the micro-enterprises and their impacts has been successfully implemented and is ongoing.</p> <p>4. Initial house hold survey analysis shows on average a 4.66 family size of participants so with 83 micro-enterprises initiated this is 428 direct beneficiaries (77% of the way towards the planned total for the project Of 550 direct beneficiaries). This will be quantified in more detail during the final rounds of the household survey programme.</p>	<p>participants by the end of the project.</p> <p>3. A final round of household surveys will be carried out with participants and analysed to document progress during year 3.</p> <p>4. Household surveys will be continued to document number of beneficiaries. As average family size of participants is slightly lower than the 5 family members assumed at the start of the project, we aim to increase the number of enterprises supported to 118 to help reach the target of 550 direct beneficiaries (defined as micro-enterprise participants and their family members).</p>
<p>Output 1.</p> <p>Quantification of the potential for micro-enterprise to reduce unsustainable use, or exploitation of primary rainforest forest habitat.</p>	<p>1. The proportion of working time participants spend on sustainable activities and micro-enterprise initiatives</p> <p>2. The proportion of working time participants <u>have available to</u> <u>spend away from their own land for</u> activities linked to unsustainable</p>	<p>The annual household surveys allow us to capture data on the proportion of time participants spend on sustainable activities and micro-enterprise initiatives. The results of the analysis will be presented in the final technical report of the project.</p> <p>By assessing how much time participants spend on sustainable activities and micro-enterprise initiatives we will be able to assess how much of their time is available to available to spend on alternative activities. The household surveys also measure other ways that participants spend their time in order to get a picture of the proportion of working time participants spend away from their</p>	

	exploitation or primary rainforest.	land.
Activity 1.1 Recruitment of participants for agroforestry and other micro-enterprise initiatives		<p>Recruited 179 participants, 92 of whom who have successfully progressed and started receiving micro-enterprise support from the project and 87 of whom will receive start up support in year 3 (these represent 84% of the planned project total and 24 further participants are planned to be recruited during the first part of year 3)</p> <p>Main recruitment in year 2 was of local participants who wanted to develop a wide range of different micro-enterprises and who then participated in the project's business development workshops (run in May & Dec 2016), which included support for 49 participants to develop simple but sustainable business plan for their micro enterprises.</p>
Activity 1.2 Measure initial unsustainable use of primary forest by local participants and ongoing levels of sustainable and unsustainable activities		Carried out the household survey that is capturing the data on participant activities each year.
Activity 1.3 Measurement involvement with, income and welfare benefits of microenterprises		Continued household survey data collection, production monitoring etc as developed in year 1. This will continue throughout project.
<p>Output 2.</p> <p>Increased knowledge within the community of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic resources.</p>	<p>1. The number of students enrolled enattending natural land management, eco-tourism, entrepreneurial and environmental awareness coursestraining.</p> <p>2. The knowledge of local participants of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic</p>	<p>1. As indicated previously the local land management course closed for local political reasons and this indicator for output 2 has been replaced by a series of successful business development and environmental awareness training delivered via workshops that have reached more members of the community (e.g. see activity 1.1 above).</p> <p>2. Increasing knowledge of sustainable practices and land management through delivery of workshops and practical application in developing micro-enterprises</p>

	resources. 3. Creation of micro-enterprise initiatives using knowledge and skills delivered by project training initiatives.	3. Provided training and skills development for the 92 micro-enterprise initiatives supported.
Activity 2.1 Delivery of Natural Land Management course training		As described above, developed and delivered a series of micro-enterprise support, land management and environmental education workshops to replace activity that would have taken place within Land Management course. Developed relationships with other local educational institutes to allow delivery of workshops.
Activity 2.2 Development of Entrepreneurial Module		Developed and delivered a entrepreneurial business development training workshop, which was held in Dec 2016.
Activity 2.3 Deliver training workshops supported by expert partners		Delivered biograden cultivation, composting, dealing with insect pests, crop rotation workshops for a total of 140 participants.
Output 3. Increased participation in sustainable micro-enterprises and associated increased incomes within the local community.	1. The number of people benefitting from the micro-enterprise initiatives. 2. The number of agroforestry plots, biogardens and micro-enterprises. 3. Income generated through sales of produce etc through the local Manu Cooperative that the project helps set up.	1. By the end of the second year there an estimated 428 people directly benefitting from the micro-enterprise initiatives (based on an initial calculation of an average 4.66 people per household, which will be refined based on the final household survey data) and 180 participants attended training by the project in Year 2 to bring the total to 339. 2. 26 Biogarden enterprises and 11 agro forestry enterprises are underway as are micro-enterprises run by 55 additional participants. 3. Sales income and the development of the Cooperative support is being monitored as the enterprises start to deliver produce, products and services

<p>Activity 3.1 Training initiatives and workshops on micro-enterprises</p>	<p>Delivered 14 training workshops across the year to 140 participants, covering a wide variety of skills and knowledge needed for the participate in the development of the different micro-enterprises. Held an additional specialist agroforestry workshop for 40 participants.</p> <p>NB. The first 14 workshops are the same workshops mentioned under activity 2.3, the workshops are designed to contribute to both Outputs 2 & 3 by including both specific training to increase participation/incomes and more general training to increase community knowledge of sustainable practices, natural land management, entrepreneurial skills etc.</p>
<p>Activity 3.2 Provide technical support and materials for creation of micro-enterprises</p>	<p>Provided ongoing one-on-one technical support to 11 agroforestry entrepreneurs.</p> <p>Provided ongoing one-on-one technical support to 20 existing and 6 new biogarden entrepreneurs.</p> <p>Provided start up micro-enterprise support to 49 new participants via business workshop and to 6 young local artisans.</p>
<p>Activity 3.3 Develop micro-finance support system for micro-enterprises</p>	<p>The Peruvian state agriculture development bank (Agrobanco) has started a microfinance service in the Manu Biosphere Reserve and a series of meetings have been held to explore how the project can use the expertise and experience developed so far to support the role out and successful implementation of this service across Manu and help the micro-enterprises developed during the project access this support.</p>
<p>Activity 3.4 Setup community co-operative to support agroforestry and biogarden businesses</p>	<p>Work continued on developing community level support for the sale of micro-enterprise products (especially from biogardens and agroforestry etc) to markets outside the Manu area. As well as regular meetings and discussions, activity included a workshop in March 2017 to explore barriers and solutions to selling products.</p>
<p>Output 4.</p>	<p>1. The number of high conservation priority species and amount of</p> <p>1. Biodiversity monitoring surveys have continued for the 44 high conservation priority bird and mammal species known in the Manu area. Additionally, surveys</p>

<p>Increased knowledge of biodiversity conserved through rainforest regeneration and how high priority conservation species use regenerating rainforest, shared through scientific papers and environmental education to local and international audiences.</p>	<p>biodiversity found in regenerating rainforest.</p> <p>2. The number of participants involved in environmental and biodiversity education courses and activities and the knowledge they display afterwards.</p> <p>3. The number of submitted and published papers, reports and other educational resources produced as a result of biodiversity monitoring.</p>	<p>of 7 indicator taxa (birds, mammals, amphibians, reptiles and butterflies, dung beetles and orchid bees) continue in the regenerating rainforest of 5 areas of the Manu Biosphere Reserve buffer zones and 1 control area of primary forest, representing an additional output of 2 extra regenerating rainforest areas to those originally planned. Dung beetles and orchid bee monitoring represent additional outputs to the original application and have been chosen for their ability to indicate ecosystem services and health of rainforest environments.</p> <p>2. A wide range of environmental and biodiversity education activities have been successfully undertaken and these are detailed in each activity below.</p> <p>3. A total of 6 papers covering new knowledge of Manu’s biodiversity, biodiversity and conservation value of regenerating rainforest and new developments in biodiversity survey methods for regenerating rainforest have been submitted and published. Two papers were published in Year 1 & 4 in Year 2. Two identification guides for Manu’s biodiversity have been completed and 2 more in the process of being written. An interim technical report on the biodiversity of the Manu Biosphere’s regenerating rainforest biodiversity was completed for the national park.</p>
<p>Activity 4.1 Survey and data collection on regenerating rainforest biodiversity</p>		<p>Biodiversity monitoring surveys continued for the 44 high conservation priority bird and mammal species known in the Manu area along with surveys of 7 biodiversity indicator taxa (birds, mammals, amphibians, reptiles and butterflies, dung beetles and orchid bees) in the regenerating rainforest of 5 key zones of the Manu Biosphere Reserve buffer zones.</p>
<p>Activity 4.2 Development of environmental education materials on biodiversity and its value in the Manu area</p>		<p>Continued work on a series of biodiversity guides (on amphibians, reptiles and butterflies, orchid bees). Bilingual field guide to “Amphibians of the Manu Learning Centre and other areas in the Manu Region” and information guide to Orchid Bees completed. The materials are used as environmental education teaching aids and to enable ecotourism guides to introduce lesser known aspects of Manu’s incredible biodiversity to their clients.</p>

<p>Activity 4.3 Biodiversity value and environmental education awareness workshops for local community and conservation managers in Manu</p>	<p>260 participants in environmental education activities in Year 2 to bring total to 430 during project so far. Year 2 activities include.</p> <p>The Real Forest Experience workshop program developed in Year 1 continued, aimed at teaching local students about the value of biodiversity and sustainable development based on experiences while in the rainforest. A total of 60 secondary school children participated over the year.</p> <p>Delivered 4 environmental education classes at the IEBR Jose Carlos Mariategui Collegio in Salvacion - 120 students.</p> <p>Participated in the Annual Banana Fair (local agricultural show) in Salvacion, with two stalls on the 2nd and 3rd of September 2017. Delivered displays on the importance of biodiversity and conducted a public taste test to demonstrate the quality and value of organically grown produce with ~60 local participants.</p>
<p>Activity 4.4 Talks, presentations and scientific communication of biodiversity results to local, national and international audiences</p>	<p>Delivered a summary of Sustainable Manu’s research projects, the results to date, and how this serves as a basis for environmental interpretation and education locally and globally, to Peruvian Tour guides and tourism students in Cusco – 150 participants.</p> <p>Presented project research results directly to over 80 international tourists visiting our base at the Manu Learning Centre.</p> <p>Produced 6 blogs (video or written word) on current biodiversity research activities at the MLC that includes reptiles, woolly monkeys and Tree Top Manu (see Table 2 Publications).</p> <p>Delivered research results to 3 visiting international school/University groups: Deakin University, Reaseheath College and Carolina School.</p>
<p>Activity 4.5 Writing of reports and scientific papers on the value of regenerating rainforest biodiversity</p>	<p>4 papers covering new knowledge of Manu’s biodiversity, biodiversity and conservation value of regenerating rainforest and new developments in</p>

	<p>biodiversity survey methods for regenerating rainforest published in Year 2. A technical report, titled Treetop Manu Technical Report: Assessing Biodiversity & Conservation Value Of The Manu Biosphere has been completed for Manu National Park covering the first 18 month of biodiversity data collected across Manu’s regenerating rainforests. The report details 4496 arboreal camera trap records of >25 species of medium-large terrestrial mammal and >60 species of bird, 9380 terrestrial camera trap records of >34 species of medium-large terrestrial mammal and >18 species of bird, 5465 records of 380 bird species along ornithological transects, 3346 individual butterflies of 284 species from baited traps, and 1201 records of 121 species of amphibian and reptile (this comprises 1051 records of 74 amphibian species and 150 records of 47 reptiles. Several other papers and reports on other aspects of biodiversity and its conservation are under development.</p>	
<p>Output 5.</p> <p>Delivery of a practical, evidence-based, implementable strategy to Manu Biosphere Reserve community documenting the potential for rainforest biodiversity conservation through sustainable development linked to rainforest regeneration.</p>	<ol style="list-style-type: none"> 1. Completion and submission to conservation decision makers in Manu and Peru of a written strategy for integrated biodiversity and sustainable development around the Manu Biosphere Reserve 2. Presentation of project results to conservation managers and decision makers 	<p>1 & 2. Due for delivery in final year of Sustainable Manu project. An initial biodiversity report detailing the results until end of 2016 has been written and shared with local conservation managers in Manu National Park and we have started to review and assess the data and lessons learned that will be used to write and develop the final strategy.</p>
<p>Activity 5.1 Collate the evidence on the conservation, sustainable development and educational gains made during the project</p>	<p>Due for delivery in final year of Sustainable Manu project</p>	
<p>Activity 5.2 Write a strategy document for the Manu area outlining how rainforest regeneration and sustainable development could be used to impact biodiversity conservation</p>	<p>Due for delivery in final year of Sustainable Manu project.</p>	

Activity 5.3 Present strategy to the Manu conservation community, Peruvian government and future funders	Due for delivery in final year of Sustainable Manu project.
Activity 5.4 Finish!	Due for delivery in final year of Sustainable Manu project.

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Impact:</p> <p>Determine the value of rainforest regeneration for catalysing biodiversity conservation and sustainable development in human-use zones of Manu Biosphere Reserve, so validating a widely applicable, collaborative solution to biodiversity loss.</p>			
<p>Outcome:</p> <p>Demonstrate to the conservation community how rainforest regeneration can deliver high-priority biodiversity conservation and enhanced livelihoods for communities currently dependent on unsustainable exploitation of rainforest habitat in Manu Biosphere Reserve.</p>	<ol style="list-style-type: none"> 1. The number and relative abundance of species of high biodiversity conservation priority, and the species richness of other indicator biodiversity, using and relying on regenerating rainforest. 2. The type and number of rainforest regeneration and sustainable micro-enterprise initiatives successfully initiated by participants trained during the project. 3. The proportion of time participants spend involved in new sustainable micro-enterprise activities, compared to time spent exploiting surrounding primary rainforest habitat. 4. The number of people directly benefiting from each micro-enterprise initiative and the amount by which income changes for each participant. 	<p>Project GIS database containing all biodiversity distribution and abundance data collected during project, annual project reports, published papers on biodiversity.</p> <p>Annual household surveys of participants who receive training and support in developing micro-enterprise initiatives. Accounts of local co-operatives selling produce.</p> <p>Annual household surveys of participants. Team leader reports (including photographic evidence) on condition and outputs of agro-forestry plots and biogardens etc will provide independent verification of how much time is being spent on these activities (we know from pilot studies approximately how much time is necessary to keep plots etc well maintain and how much effort is required to produce specific outputs from micro-enterprises).</p> <p>Annual household questionnaire surveys, project training records and accounts of local co-operatives selling produce.</p>	<p>Local community and conservation managers remain receptive to micro-enterprise approaches, to combining conservation and sustainable development goals and to project staff.</p> <p>Natural disasters don't impede access to the project area for lengthy periods (many weeks).</p> <p>Major national or international political instability doesn't cut transport links.</p>
<p>Output 1.</p> <p>Quantification of the potential for micro-enterprise to reduce unsustainable use,</p>	<ol style="list-style-type: none"> 1. The proportion of working time participants spend on sustainable activities and micro-enterprise initiatives 	<p>Annual household surveys of participants. Team leader reports (including photographic evidence) on condition and outputs of agroforestry</p>	<p>The following Output level assumptions apply to varying degrees to the 5 outputs and for convenience are listed once here rather than being repeated against each</p>

<p>or exploitation of primary rainforest forest habitat.</p>	<p><i>By year 3, we expect involvement in micro-enterprises will take > 50% of beneficiaries time for half of those involved and >20% of time for the remaining beneficiaries.</i></p> <p>2. The proportion of working time participants spend away from their own land for activities linked to unsustainable exploitation or primary rainforest.</p> <p><i>By year 3 we expect time spent on activities associated with unsustainable use of the rainforest to reduce by 50 to 90% depending on participants' involvement.</i></p>	<p>plots and biogardens etc will provide independent verification of how much time is being spent on these activities as we know from pilot studies approximately how much time is keep plots etc well maintain and how much effort is required to produce specific outputs from micro-enterprises.</p>	<p>output.</p> <p>The majority of local participants involved in micro-enterprise activities remain engaged with activities. Project staff will have regular contact with participants throughout the project so can monitor for any evidence of reducing engagement and so offer support to help participants through difficulties.</p> <p>Biodiversity survey sites remain accessible during the project and are not inaccessible because of local political difficulties. Accessibility of sites can be easily monitored and project staff will keep in regular contact with local communities.</p> <p>Technical Institute management does not change and remains engaged with development of curriculum. The project is supported by the Peruvian Ministry of Education as well as within the institute so abrupt changes don't currently seem likely.</p>
<p>Output 2.</p> <p>Increased knowledge within the community of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic resources.</p>	<p>1. The number of students enrolled on natural land management, eco-tourism, entrepreneurial and environmental awareness courses.</p> <p><i>By year 3, 60 full time students enrolled in local technical institute courses supported by project and participating in entrepreneurial and environmental awareness courses.</i></p> <p>2. The knowledge of local participants of sustainable practices, natural land management, entrepreneurial skills, eco-tourism and local genetic resources.</p> <p><i>Annual retention of sustainable practices, entrepreneurial skills etc based on annual house hold knowledge surveys of participants and based on</i></p>	<p>Annual household surveys of participants who receive training and support in developing micro-enterprise initiatives. Accounts of local co-operatives selling produce</p> <p>Annual household questionnaire surveys, project training records and accounts of local co-operatives selling produce</p>	

	<p><i>regular assessments of skills and knowledge being utilised by participants in their micro-enterprise initiatives.</i></p> <p>3. Creation of micro-enterprise initiatives using knowledge and skills delivered by project training initiatives.</p> <p><i>The creation by year 3 of 110 micro-enterprises based on knowledge of sustainable practices, natural land management, entrepreneurial skills, etc.</i></p>		
<p>Output 3.</p> <p>Increased participation in sustainable micro-enterprises and associated increased incomes within the local community.</p>	<p>1. The number of people benefitting from the micro-enterprise initiatives.</p> <p><i>550 people directly benefitting from micro-enterprise initiatives, including 250 from agroforestry initiatives and a further 300 people trained in or working on micro-enterprise initiatives by the end of 3 years.</i></p> <p>2. The number of agroforestry plots, biogardens and micro-enterprises.</p> <p><i>By end of project 50 agroforestry enterprises carried out by local men, 30 biogarden enterprises run by local women, 15 eco-tourism guide enterprises, and 15 enterprises generating income from the 3 further micro-enterprise initiatives which the local communities choose to receive training in during the year 1 of the project.</i></p> <p>3. Income generated through sales of produce etc through the local Manu Cooperative that the project helps set up.</p> <p><i>By year 3, sales through cooperative from the projects 6 types of micro-enterprise initiative to represent at least 20% of baseline income measured before participants receive training.</i></p>	<p>Annual household surveys of participants. Team leader reports (including photographic evidence) on condition and outputs of agroforestry plots and biogardens etc will provide independent verification of how much time is being spent on these activities as we know from pilot studies approximately how much time is keep plots etc well maintain and how much effort is required to produce specific outputs from micro-enterprises.</p> <p>Annual household surveys of participants who receive training and support in developing micro-enterprise initiatives. Accounts of local co-operatives selling produce</p> <p>Annual household questionnaire surveys, project training records and accounts of local co-operatives selling produce</p>	

<p>Output 4.</p> <p>Increased knowledge of biodiversity conserved through rainforest regeneration and how high priority conservation species use regenerating rainforest, shared through scientific papers and environmental education to local and international audiences.</p>	<p>1. The number of high conservation priority species and amount of biodiversity found in regenerating rainforest.</p> <p><i>By 2.5 years, 80% of Manu's 44 high conservation priority bird and mammal detected using regenerating rainforest and the relative abundance of each in the 3 project focal areas documented. Document the species richness of 3 further indicator taxonomic groups (amphibians, reptiles and butterflies) in regenerating forest.</i></p> <p>2. The number of participants involved in environmental and biodiversity education courses and activities and the knowledge they display afterwards.</p> <p><i>By end of year 3, 300 participants involved in project biodiversity and environmental workshops and educational activities, with knowledge gains monitored by questionnaires.</i></p> <p>3. The number of submitted and published papers, reports and other educational resources produced as a result of biodiversity monitoring.</p> <p><i>5 papers submitted (and 3 accepted) by peer reviewed scientific journals before end of project. Annual reports to Manu National Park managers documenting the abundance of the 5 key mammal conservation targets in the Manu NP monitoring plan (Spider Monkey, Woolly Monkey, Jaguar, Tapir and Peccary) in regenerating rainforest forest. Three educational resources covering identification of Manu's key biodiversity.</i></p>	<p>Project GIS database containing all biodiversity distribution and abundance data collected during project, annual project reports, published papers on biodiversity.</p>	
<p>Output 5.</p> <p>Delivery of a practical, evidence-based, implementable strategy to Manu</p>	<p>1. Completion and submission to conservation decision makers in Manu and Peru of a written strategy for</p>	<p>Project GIS database containing all biodiversity distribution and abundance data collected during project, annual</p>	

<p>Biosphere Reserve community documenting the potential for rainforest biodiversity conservation through sustainable development linked to rainforest regeneration.</p>	<p>integrated biodiversity and sustainable development around the Manu Biosphere Reserve</p> <p><i>A written technical report that; 1) Records, captures and assesses the evidence collected by the Sustainable Manu demonstration project on the potential for rainforest biodiversity conservation through sustainable development linked to rainforest regeneration and 2) Presents a costed strategy for catalysing biodiversity conservation through rainforest regeneration and sustainable micro-enterprise across the human-use zones of Manu Biosphere Reserve so that large scale funding can be sought for its implementation.</i></p> <p>2. Presentation of project results to conservation managers and decision makers</p> <p><i>In the final 3 months of the project staff present the project results at workshops with a) Manu National Park staff, b) local communities, c) conservation NGOs working in Manu and d) government departments.</i></p>	<p>project reports, published papers on biodiversity.</p>	
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<p>Activities</p> <p>Activity 1.1 Recruitment of participants for agroforestry and other micro-enterprise initiatives</p> <p>Activity 1.2 Measure initial unsustainable use of primary forest by local participants and ongoing levels of sustainable and unsustainable activities</p> <p>Activity 1.3 Measurement involvement with, income and welfare benefits of microenterprises</p> <p>Activity 2.1 Delivery of Natural Land Management course</p> <p>Activity 2.2 Development of Entrepreneurial Module</p> <p>Activity 2.3 Deliver training workshops supported by expert partners</p> <p>Activity 3.1 Training initiatives and workshops on micro-enterprises</p>
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Activity 3.2 Provide technical support and materials for creation of micro-enterprises

Activity 3.3 Develop micro-finance support system for micro-enterprises

Activity 3.4 Setup community co-operative to support agroforestry and biogarden businesses

Activity 4.1 Survey and data collection on regenerating rainforest biodiversity

Activity 4.2 Development of environmental education materials on biodiversity and its value in the Manu area

Activity 4.3 Biodiversity value and environmental education awareness workshops for local community and conservation managers in Manu

Activity 4.4 Talks, presentations and scientific communication of biodiversity results to local, national and international audiences

Activity 4.5 Writing of reports and scientific papers on the value of regenerating rainforest biodiversity

Activity 5.1 Collate the evidence on the conservation, sustainable development and educational gains made during the project

Activity 5.2 Write a strategy document for the Manu area outlining how rainforest regeneration and sustainable development could be used to impact biodiversity conservation

Activity 5.3 Present strategy to the Manu conservation community, Peruvian government and future funders

Activity 5.4 Finish!

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
2	Number of people to attain Masters qualification				1		1	0
6A	Number of people to receive other forms of education/training			169	180		339	300
7	Number of training materials to be produced for use by host country				2		2	2
10	Number of individual field guides/manuals to be produced				2		2	4
11A	Number of papers published			2	4		6	5
12A	Number of computer based databased established			1			1	1
14B	Number of conferences etc attended			2	1		3	4
20	Estimated value of physical assets handed over to host country			£14k			£14k	£16k
22	Number of permanent field plots established			31			31	30
23	Value of resources raised from other sources (e.g., in addition to Darwin funding) for project work							

Table 2 Publications

Of the journal papers listed below, the first 4 are publications published in Year 2 and the following two were published during Year 1 of the project. Copies of all the publications are available online via the links provided so we haven't submitted copies along with this report. Please let us know if you'd like us to submit pdf copies.

Title	Type (e.g. journals, manual)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available)
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	, CDs)					online)
A new species of poison-dart frog (Anura: Dendrobatidae) from Manu Province, Amazon region of southeastern Peru, with notes on its natural history, bioacoustics, phylogenetics, and recommended conservation status	Journal	Shirley Jennifer Serrano Rojas, Andrew Whitworth, Jaime Villacampa, Rudolf von May, Roberto C Gutierrez, Jose M. Padial and Juan Carlos Chaparro 2017	F	Peruvian	Zootaxa 4221(1):071-094	https://www.researchgate.net/publication/312378173
Methods matter: Different biodiversity survey methodologies identify contrasting biodiversity patterns in a human modified rainforest — A case study with amphibians	Journal	Andrew Whitworth, Jaime Villacampa, Shirley Jennifer Serrano Rojas, Roger Downie and Ross Macleod 2017	M	UK	Ecological Indicators 72:821-832	https://www.researchgate.net/publication/308404338
Out on a limb: Arboreal camera traps as an emerging methodology for inventorying elusive rainforest mammals	Journal	Andrew Whitworth, Laura Dominie Braunholtz, Ruthmery Pillco Huarcaya, Ross MacLeod and Christopher Bernie 2016	M	UK	Tropical Conservation Science 9(2):675-698	www.researchgate.net/publication/304465402
Past Human Disturbance Effects upon Biodiversity are Greatest in the Canopy; A Case Study on Rainforest Butterflies	Journal	Andrew Whitworth, Jaime Villacampa, Alice Brown, Ruthmery Pillco Huarcaya, Roger Downie, Ross MacLeod, 2016	M	UK	PLoS ONE 11(3)	www.researchgate.net/publication/297240261
How much potential biodiversity and conservation value can a regenerating rainforest provide? A 'best-case scenario' approach from the Peruvian Amazon	Journal	Andrew Whitworth, Roger Downie, Rudolf von May, Jaime Villacampa, and Ross MacLeod, 2016	M	UK	Tropical Conservation Science 9(1):224-245	www.researchgate.net/publication/299455395
A first test of the thread bobbin tracking technique as a method for studying the ecology of herpetofauna in a tropical rainforest	Journal	Emily Waddell, Andrew Whitworth, and Ross Macleod, 2016	F	UK	Herpetological Conservation and Biology 11(1):61-71	www.researchgate.net/publication/301779428
Reptile reproduction	Blog	Project staff			Manu Website	http://www.crees-manu.org/new-research-reproduction-little-known-amazonian-reptiles/
Tree Top Manu Paper	Blog	Project staff			Manu Website	http://www.crees-manu.org/new-scientific-paper-canopy-camera-traps-reveal-secretive-wildlife
Wooley Monkey Feeding habits	Blog	Project staff			Manu Website	http://www.crees-manu.org/peruvian-woolly-monkey/

Bobbin-tracking reptiles	Blog	Project staff			Manu Website	http://www.crees-manu.org/new-paper-innovation-in-tropical-herp-monitoring/
Research paper summary	Blog	Project staff			Manu Website	http://www.crees-manu.org/research-papers-manu-national-park/

Appendix 4: Sustainable Manu Biodiversity Survey Interim Report

The findings of the Sustainable Manu project's biodiversity survey programme so far are described in the Tree Top Manu Technical Report a summary version of which is attached separately and the following links show some of the project video summaries made to convey the biodiversity findings and methods more informally. The full and more formal version of the biodiversity technical report can also be supplied as a pdf if desired.

Biodiversity Video Summaries

Tree Top Manu: canopy camera traps reveal secretive wildlife

<https://www.youtube.com/watch?v=XkyyFKbzbeQ>

Cats of the Peruvian Amazon; the Manu Biosphere Reserve (6,597 views)

<https://www.youtube.com/watch?v=5bxi3JbK6QQ>

Harpy and Crested eagle caught on camera in the canopy of the Amazon Rainforest (27,510 views)

<https://www.youtube.com/watch?v=0n9F3sfzLu8>

Birds of TreeTop Manu; the Manu Biosphere Reserve (2,661 views)

<https://www.youtube.com/watch?v=4UptX61W1c>

Tree Top Manu 2016: canopy camera traps reveal secret lives of rainforest wildlife (214 Views)

<https://www.youtube.com/watch?v=BibobZMTmlU>

Online Media reporting of project biodiversity results

<https://news.mongabay.com/2015/11/researchers-in-peru-capture-some-of-the-amazons-rarest-and-most-elusive-wildlife-on-video/>

Appendix 5: Links to biodiversity guides that project has produced as educational resources to communicate richness and value of Manu's biodiversity and to support ecotourism guiding micro-enterprises.

Guide to Mau's Amphibian Biodiversity

<https://view.joomag.com/field-guide-amphibians-of-manu-field-guide-amphibians-of-manu/0570162001483967388?short>

Orchid Bees (Euglossini) of the Manu Learning Centre - Abejas de las Orquideas (Euglossini) del Manu Learning Centre

https://www.researchgate.net/publication/319262809_Orchid_Bees_Euglossini_of_the_Manu_Learning_Centre_-_Abejas_de_las_Orquideas_Euglossini_del_Manu_Learning_Centre

Appendix 6: Sample House Hold Survey Data

Attached as a separate Excel spread sheet

Appendix 7: List of Project Training Participation

Attached as a separate Excel spread sheet

Appendix 8: Record of micro-enterprise business development participants

Round Dec-17

Fecha Date	Nombre Participant Name	DNI ID Number	Tema Taller / Evento Micro-enterprise Type
15/12/2016	Agustin Condori Cruz	42550447	Producción y comercialización de miel de abeja multiflor
15/12/2016	Ana Teran Aguirre	04960062	Producción y comercialización de paco
15/12/2016	Carmelo Marca Quispe	42359259	Producción y comercialización de porcinos
15/12/2016	Cluber Huamani Salas	43176357	Elaboración de harina de plátano orgánico - Palotoa
15/12/2016	Cyntia Pantoja Diaz	25003883	Producción y comercialización de porcinos
15/12/2016	Delia Ninantay Mamani	04960931	Elaboración de bisutería a base de semillas de la zona
15/12/2016	Edith Oruro Gonzales	41920298	Elaboración de bisutería a base de semillas de la zona
15/12/2016	Esmeralda Paja Pacori	42359263	Elaboración de panes y repostería con productos de la zona
15/12/2016	Felipa Pacori Cutipa	41369523	Elaboración de panes y repostería con productos de la zona
15/12/2016	Flor Ginesa Paja Pacori	72724842	Elaboración de panes y repostería con productos de la zona
15/12/2016	Isaias Abarca Poccohuanca	04960875	Producción y comercialización de miel de abeja
15/12/2016	Juan Climaco Pantoja Palomino	25194363	Producción y comercialización de porcinos
15/12/2016	Juana Salas Taiña	04960827	Elaboración de harina de plátano orgánico - Palotoa
15/12/2016	Leocadio Salas Taiña	04960114	Elaboración de harina de plátano orgánico - Palotoa
15/12/2016	Lucas Quispe Huayllani	04960124	Producción y comercialización de paco
15/12/2016	Luis Machaca Apaza	04960301	Producción y comercialización de porcinos
15/12/2016	Maria Luisa Camacho Guillen	04960723	Producción y comercialización de miel de abeja multiflor
15/12/2016	Nilda Vianney Rojas Maita	41074838	Producción y comercialización de miel de abeja multiflor
15/12/2016	Nivia Ninantay Phacsi	45374733	Elaboración de bisutería a base de semillas de la zona
15/12/2016	Pascual Ochoa Teran	04961107	Producción y comercialización de paco
15/12/2016	Raquel Salas Taiña	42198550	Elaboración de harina de plátano orgánico - Palotoa
15/12/2016	Reveca Pacori Quispe	04960841	Elaboración de panes y repostería con productos de la zona
15/12/2016	Rocio Pizango Gonzales	41920298	Elaboración de bisutería a base de semillas de la zona
15/12/2016	Teodera Aquino Layme	42354603	Producción y comercialización de paco
15/12/2016	Victoria Velazques Rojas	251332233	Producción y comercialización de miel de abeja multiflor
15/12/2016	Abel Quispe Champi	41592489	Producción y comercialización de pan
15/12/2016	Ana Marisol Estrada Muñoz	29722707	Tratamiento de agua para consumo humano
15/12/2016	Betty Inquillay Huanca	43033638	Producción y comercialización de aves de carne
15/12/2016	Cristina Quispe Quispe	41893190	Producción y comercialización de pan
15/12/2016	Eduardo Calixto Huamani Padilla	04960231	Producción y comercialización de miel de abeja ecológica
15/12/2016	Elena Arque Condori	47828290	Producción y comercialización de aves de carne
15/12/2016	Elvin Cledy Quispe Condori	70923122	Producción y comercialización de miel de abeja ecológica
15/12/2016	Felix Hermogenes Quispe Quispe	04960944	Producción y comercialización de miel de abeja ecológica
15/12/2016	Francisco Sanchez Condori	04960445	Producción y comercialización de miel de abeja
15/12/2016	Geser Sanchez Quispe	45061292	Producción y comercialización de miel de abeja
15/12/2016	Julia Ines Cueva Vilca	04961029	Producción y comercialización de aves de carne
15/12/2016	Julian Pataca Huachaca	40705877	Producción y comercialización de pan
15/12/2016	Julio Jorge Uscata Padilla	04960755	Producción y comercialización de miel de abeja
15/12/2016	Lillian Mayumi Cusiquispe Mamani	47974216	Producción y comercialización de pollos de carne
15/12/2016	Lourdes Soto Marchan	05071106	Tratamiento de agua para consumo humano
15/12/2016	Lucio Esteban Sullo Humpiri	02172348	Tratamiento de agua para consumo humano

15/12/2016	Maria Ysabel Ticona Ccoycca Miguel Grimaldo Carrion	02419639	Producción y comercialización de pollos de carne
15/12/2016	Martinez	04960746	Producción y comercialización de miel de abeja
15/12/2016	Paulina Chura Checmapocco	23871236	Producción y comercialización de pan
15/12/2016	Severo Lucana Nuñez	04961019	Producción y comercialización de miel de abeja ecológica
15/12/2016	Silvia Eugenia Ccasani Garcia	43510044	Producción y comercialización de pollos de carne
15/12/2016	Silvia Molina Villalobos	40176477	Producción y comercialización de pollos de carne
15/12/2016	Teresa Moscoso Maiva	04960135	Producción y comercialización de aves de carne
15/12/2016	Valentin Achahui Suluaga	04960411	Tratamiento de agua para consumo humano

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Y (Word version without appendices and PDF version including appendices)
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	N
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	No, to be submitted separately
Do not include claim forms or other communications with this report.	