



Department
for Environment
Food & Rural Affairs



Darwin Initiative Final Report

To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/>) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

Project Reference	19-018
Project Title	Agroforests: a critical resource of sustaining megadiversity in Guatemala
Host country(ies)	Guatemala
Contract Holder Institution	University of Greenwich
Partner Institution(s)	National Coffee Association (ANACAFE); University of Valle Guatemala (UVG); Foundation for the Defence of Nature (FDN) Technical Office for Biodiversity (OTECBIO), Association of Organic Producers of Polochic (APODIP), and Association of Producers of Palajunoj.
Darwin Grant Value	£250,256
Funder (DFID/Defra)	DFID
Start/End dates of Project	April 2012 - March 2015
Project Leader Name	Jeremy Haggar
Project Website	
Report Author(s) and date	Jeremy Haggar (NRI), Mariela Melendez (ANACAFE), Laura Saenz & Margarita Vides (UVG), Cesar Tot & Eldin Sierra (FDN)

1 Project Rationale

Protected areas in Guatemala tend to be concentrated in areas of lowland forest (e.g. Peten) or high montane areas of difficult access; there is little protection for the biodiverse rich lower montane forests which tend to be highly fragmented. Agroforests of coffee, cocoa and other crops shaded with diverse assemblages of native species provide forest-like habitat in the lower montane areas of Guatemala and much of Mesoamerica. Previous research by the project partners has shown that economically these agroforestry systems are not the most productive systems for the main crops, and especially when prices fall tend to be converted to other less biodiverse production systems (Haggar et al 2013, Environmental Management 51: 811-823). The project aims to evaluate the role of these agroforests in the landscape mosaic to improving connectivity for biodiversity between forest patches, identify and facilitate access to incentives and markets that promote biodiversity by farmers managing agroforest systems, and inform public and private policies on how they can be more effective in providing those incentives.

The project is implemented in two contrasting areas of Guatemala the first Palajunoj is on the southern slope of the Pacific volcanic chain between the departments of Retahuleu and Quetzaltenango, the second site Polochic is in the east on the northern slope of the Sierra Las Minas Biosphere Reserve (the reserve is administered by project partner FDN). FDN works with local communities improve their livelihoods while conserving the landscape of the

Biosphere Reserve. In Palajunoj the project works with the Palajunoj Producers Association – an association of about 32 medium to large scale farms with interests in conserving biodiversity and two small-scale organic producers associations (Loma Linda Cooperative and Nueva Alianza Association) with about 130 members between them. In Polochic the project works with the Polochic Organic Producers Association (APODIP), which has about 500 members, focussing activities in 6 indigenous Q’eqchi communities with about 120 organic coffee producers.

In both regions the communities living on the edge of the high-montane remnant forests are small-scale indigenous farms some of whom have formed organic-Fairtrade certified organizations. Despite these certifications educational, technical and geographic limitations mean these groups have poor ability to meet the challenges of new outbreaks of pests and diseases and demanding and variable markets for their products. At the same time the biodiversity benefits of being organic are not directly recognized, while being in the buffer zone of a protected area places restrictions on how they manage their land. The project aims to support these communities in accessing additional incentives to recognize and support conservation of biodiversity systems in the buffer zone of these protected areas. During the course of the project the fall in coffee prices and new outbreaks of pests and diseases in coffee and cardamom caused incomes of these families to fall about 60-70% sending them back into poverty (see below). Subsequently the project dedicated some resources to supporting organic coffee farmers to recovering their coffee production with the aim of preventing them from needing to use pesticides that would have negative environmental effects, and recovering their incomes.



2 Project Achievements

2.1 Outcome

The revised approved purpose of the project was: Improved access for farming families to public and private policies that recognize the role of agroforests in meeting the objectives of the CBD. The indicators for this are:

- i. Public and private policies with greater recognition of the contribution of agroforests to biodiversity conservation

Public policies have maintained a commitment to the conservation of biodiversity with the Presidential signing of the National Biodiversity Strategy in 2012. This new policy recognizes the role of sustainable productive landscapes in biodiversity conservation. Project actions have identified disincentives in the Protected Areas regulations for Private Nature Reserves. Project partners (ANACAFE and Association of Private Nature Reserves of Guatemala) participated in public consultations for a general revision of these regulations and used project documents (report: The role of Private Nature Reserves and associated Ecotourism activities in biodiversity conservation in Guatemala) to support their claims for the revision of the Protected Areas

regulations for private nature reserves. The revised version of the regulation has not yet been made public so we do not know the result. As similar issue was the inclusion of certain trees in the on the protected species list that are used as shade in coffee plantations, consultations between ANACAFE and CONAP are on-going around this point. Project partners (FDN and UVG) were also part of the revisions and negotiations of Probosques the revised forestry incentives law that broadens access to incentives for forest conservation and agroforestry, removing the emphasis on plantation forestry. The law is awaiting approval by the national assembly.

At the same time the Ministry of Environment and Natural Resources is negotiating a proposals with GEF to fund the Coffee Biological Corridor which will substantially build upon many of the lessons from the project.

- ii. Number of farming families accessing and implementing public and private incentives to conserve biodiversity

Within the areas of intervention the project is assisting farmers in accessing specific incentives for biodiversity conservation, and addressing negative market and pest impacts on sustaining participation in private sustainability standards.

Number of organic certified farmers has fallen; in the case of Polochic by 40%, but in the case of Loma Linda only by 3%; overall the number of certified for all certifications farms fell by 26% (see report: Evaluation of changes 2012-2015). This was primarily due to the lack of options to control coffee rust under organic conditions and uncertain price incentives at that time. No additional large scale farms have become certified, although two are still considering the results of the diagnostic study of the implications for certification conducted by the project.

The number of farms receiving forestry incentives has increased from only 2 large-scale farms at the start of the project to 182 Q'eqchi farmers in Polochic now registered to receive PINPEP forest conservation, reforestation or agroforestry incentives (although payments are pending inspection in late 2015) and one small-holder community has also accessed PINFOR forest conservation incentive (Loma Linda with 112 families).

The number of families and communities involved in eco-tourism has remained the same, due to security risks the number of visitors they receive has fallen overall from average 854 visitors per year to 458 visitors per year, and income from average US\$14,200 to US\$7,300; although the community eco-tourism has grown – more than doubling in one case.

The number of farms registered as private nature reserves has increased from five to eight, in addition to the 2 community private nature reserves. Five additional farms with support from the project have had studies conducted to become private nature reserves but have not as yet made a decision whether to opt for this status.

The outcome of many of the actions is not clear at the end of the project due to the timeframe associated with their implementation and for them to generate impacts (e.g. for the approval of a sustainable certification or receipt of reforestation or forest conservation incentive payment, or for training in tourism to improve tourist experience and stimulate further visits). Additional time would be required to make an effective evaluation of the outcome of the project.

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

The higher level impact proposed by the project was stated as:

Goal: Improved policies on sustainable use and equitable benefits in the implementation of the objectives of the CBD Guatemala

Indicator: Biodiversity policy recognizes semi-natural systems and has strengthened elements for sustainable management, and generation of equitable benefits from those systems

In the first year of the project the Guatemalan government published a new National Biodiversity strategy. This included the concept of sustainable productive landscapes and thus recognized the importance of agroforestry systems (as an example of a semi-natural system). The current project represented an example of how this concept could be implemented and the

potential and limitations of land-owners to access the different policy mechanisms providing incentives for conservation.

Firstly we have been able to demonstrate the importance of agroforestry systems for biodiversity conservation at a landscape scale. Secondly, we have been able to evidence the limitations of participation in the private nature reserve system by land-owners who wish to conserve but are negatively affected by regulations designed for national parks. Project partners (FDN and UVG) were also part of the revisions and negotiations of Probosques the revised law for broadening access to incentives for forest conservation and agroforestry, removing the emphasis on plantation forestry.

Although no indicators were established as regards poverty alleviation, the change in strategy of the project to support organic-Fairtrade producers combat the impacts of coffee rust also has human development benefits. The combined impacts of falls in coffee prices and falls in production due to rust have led to a decline in income from coffee from US\$1200 in 2010/11 to \$300 per household in 2013/14. Coffee represents 60% of household income. Due to the 2-4 year period needed to recover coffee production recovery of family income has yet to occur even in communities where the coffee rust management strategy was successful. Families that are registered with PINPEP will receive between US\$490-980 within a year and between US\$1200 and US\$2400 over the next 5 years of incentive income. This will substantially buffer their income losses over the past 2 years and hopefully tide them over while they regenerate their coffee plantations.

2.3 Outputs

Output 1. Demonstrate the importance of agroforests in the conservation of biodiversity in lower montane areas of Guatemala

i. Quantitative assessment of extent of agroforests

Maps quantifying the extent of the main forest and agroforest production systems have been generated for the two project sites (Palajunoj 26,000 ha and Polochic 12,000 ha) have been generated by the GIS lab of the Centre for Environmental and Biodiversity Studies at UVG (pdf of maps attached). This has enabled an evaluation of forest fragmentation, which is extremely high i.e. there are multiple small forest fragments and few large forest blocks. The techniques for differentiating forest from shaded coffee and other tree-based land-uses are being applied to the national forest mapping; including the detailed mapping needed to differentiate forest regeneration and degradation for the national REDD programme.

ii. Landscape biodynamics between agroforests and forests determined

The biodiversity of the forest and agroforest land-uses has been characterised and used to estimate the role of the agroforestry systems in increasing the connectivity for biodiversity in the landscape (see biodiversity and connectivity reports attached). These activities were led between the Centre for Environmental and Biodiversity Studies at UVG and NRI, but with support from the field staff of ANACAFE and FDN (who were taught in the biodiversity sampling methods and undertook the majority of the field sampling). After review of previous research and the land use mosaics of the study sites it was decided to concentrate the project research on insect and tree diversity. The land uses evaluated in Palajunoj were forest (secondary or disturbed), simple-shade coffee, complex shade coffee and Rubber or Macadamia; and in Polochic forest, coffee, cardamom, and fallow). It was decided to sample leaf-litter and herbaceous vegetation to quantify diversity of ants and cicadellidae (a Hemipteran order) insects respectively; although total arthropod morphospecies diversity was also estimated from the herbs. The four main land uses were sampled on ten farms across an altitudinal gradient of 600-1200 m above sea level in each zone with one sampling in the wet season and one in the dry season. Each sampling generates 240 samples for each insect group. Two entomologists specialists in these groups have been contracted to identify the ants (Laura Saenz) and cicadellidae (Pablo Bolanos). In the case of the cicadellidae the insects collected are the first reference collection for this group in Guatemala, while the ants collected complement the existing collection of the University of Valle – both collections have been formally handed over to the University of Valle Entomology Laboratory to be part of their permanent reference collection. Analyses of the data have been completed comparing species richness, diversity and composition between the different land uses and are presented in the supporting

documents. Overall 94 species of trees, 84 species of ants and 68 species of cicadellidae were found in Palajunoj, and 86, 90 and 64 species respectively in Polochic (Sierra Las Minas). Indicators of relative biodiversity of the land-uses and the mapping of their spatial distribution were used to estimate their contributions to landscape connectivity for biodiversity. This is critical to supporting policies and programmes under development such as the Coffee Biological Corridor Programme under development by the Ministry of Environment with funding from GEF. A formal high-impact academic publication is in the process of being developed to present the results of this research.

Output 2. Identify effective support mechanisms for communities and land-owners to conserve biodiverse agroforest systems

i. Incentives for farmers to conserve biodiversity identified

Incentives to conserve biodiversity have been identified through a study on the “Role of Private Nature Reserves and associated eco-tourism in biodiversity conservation in Guatemala” led by NRI economist Diego Naziri, in collaboration with FDN and ANACAFE. The study compared the functioning of Private Nature Reserves in Palajunoj with the Cloud Forest Biological Corridor of Purulha (adjacent to the Sierra Las Minas Biosphere Reserve). The aim was to evaluate the value of Private Nature Reserves and eco-tourism to land-owners and whether they recognized farmers who conserve biodiversity and what the incentives and disincentives are associated with them. While there were incentives there were also some strong disincentives for coffee farmers to become Private Nature Reserves due to restrictions of the management of the shade trees in the coffee. At the same time Private Reserves formed the basis of a successful eco-tourism business for farms in Purulha, which could serve as an example for Palajunoj where such initiatives are only starting. The results and lessons from this study were shared with the Association of Private Nature Reserves, CONAP, project partners and the land-owners (copy of the report in supporting documents). They have provided a basis for negotiations between ANACAFE, the Private Reserve Association and CONAP on the rules for private reserves (see Outcome).

ii. Two producer’s associations with strategies to conserve biodiversity

Strategic plans were developed for the producer associations of Palajunoj and Polochic (summaries attached in English in supporting information). These were developed through consultation with the board of directors of each association and consultation with the membership. The strategic plans covered all aspects of the organizations operations. In terms of biodiversity they identified key actions to support biodiversity through Reforestation incentives in Polochic and promotion of Eco-tourism and Private Nature Reserves in Palajunoj.

iii. Number of producers accessing policies that support on-farm biodiversity

The number of farmers registered to receive forestry incentives has substantially increased from two large farms to 182 Q’eqchi small holders plus 1 community project (112 families).

Through joint planning with the managers and board of APODIP it was decided the reforestation incentives could be an important option to maintain forest cover and supplement income in the communities of Polochic. FDN have held workshops with 5 indigenous communities to analyse the option of presenting an application for reforestation incentives to the national Programme for Forestry Incentives for Small Producers (PINPEP). FDN is providing support in developing the application and supporting documentation, as most of the farmers speak little Spanish this is not something they could do for themselves. Three of the communities (and 182 members) have opted to apply for the incentives. The other two communities were concerned that it required assigning long-term individual rights to communal land, that they had not decided upon.

In Palajunoj the Private Nature Reserve Association was contracted to provide support the Palajunoj Producers Association and three community associations to implement the plan for the region which included studies of mammals, birds and reptiles on eco-tourism farms; training in environmental education; diagnosis of aptitude to become private nature reserves, diagnosis of quality of water sources, development of tours and guides for tourists, and a promotional

video of Palajunoj that will be distributed by the producers (supporting information in Spanish available upon request).

Objectives of Palajunoj Producers Association as presented in Strategic Plan

Institutional Strengthening	Promote the association Redevelopment membership system
Research and Information management	Characterization and monitoring of biodiversity Determine quality and quantity of hydrological resources
Agriculture and Forestry Management	Training programme in agriculture and forestry Develop management capacity in agriculture and forestry Installation of firewood lots and fuel saving ovens Reforest with native species
Tourism development	Training programme in tourism Develop a tourist route Internal strengthening in tourism
Environmental Education	Community training School home gardens
Marketing and finance	Nutrition based on secondary products of coffee farms Develop trade-mark for regional products Obtain access to incentives

The number of farms with eco-tourism is currently the same as at the start of the project. Two new farms are considering starting to receive visitors and have received training, but are waiting to see whether sufficient tourists will start visiting the area to justify offering this service.

Output 3. Private policies and markets provide greater recognition of biodiversity value of agroforest coffee

i. Private policies/Sustainable certifications reinforce criteria that recognize biodiversity Consultations with UK traders in sustainable coffee indicated limited demand for biodiversity-friendly products and little evidence of the benefits of sustainable certifications; for the same reasons there is little incentive for certifications to reinforce this area. Data from an earlier project has now been published in Biodiversity and Conservation that supports the biodiversity value of sustainable certifications and organic coffee production in particular (copy attached). A further publication on economic-environmental trade-offs has been submitted to Conservation Biology.

ii. Number of farms with sustainable certification (see Outcome above).

iii. Increased sales of sustainably certified products (Rainforest Alliance, Bird Friendly etc.)

The number of farmers accessing certified markets has decreased by 26% due to the impacts of coffee rust on production. The small-scale producers associations were all already organic and Fairtrade certified. In these cases the critical issue has been to prevent members from abandoning organic status (due to the limitations on control of coffee rust – see 2.2 above) and to reinforce the performance of the Board of Directors of the Association of Organic Producers of Polochic. In the later case the project has provided training to the members of the Board on their roles, and in understanding market dynamics. The later is important as many indigenous farmers don't understand the reasons for the fluctuations in price and believe that the association is not effective. This leads to lower sales of coffee and threatens the economic viability of the organization.

The project partners considered that the threat of farmers abandoning organic production methods was the greatest threat to on-farm biodiversity (as well as severely affecting household income) and a priority to address. Therefore the project decided to provide training and inputs to organic farmers to control rust within the norms of organic production. Training and application of products with farmers was undertaken in Polochic by APODIP and FDN and

in Palajunoj between ANACAFE and Cooperative Loma Linda and Association of Nueva Alianza. Training events are detailed in supporting information. Spray and protective equipment plus organically approved fungicides were bought equivalent to £2792 for Loma Linda Coop, and £1560 for APODIP. Applications to control rust were undertaken on 45 ha of coffee in Loma Linda (75% of the organic coffee), and on farms in two communities of APODIP that were most affected by rust in year 2. Applications to control coffee rust continued in year 3 in Loma Linda they were expanded to non-organic members of the coop in the name of equity and because they were encouraged by the results. Unfortunately in Polochic this was not the case and the control measures were not effective, possibly due to a more favourable climate for coffee rust. In both cases farmers have been also received seed of rust resistant coffee varieties; seed was been distributed to 60 farmers in Loma Linda in 2014 and 140 farmers in Polochic in early 2015. It will take 3 years for this coffee to start production.

The number of large-scale farmers with Rainforest Alliance certification has remained (the same 1 organic, 1 Rainforest Alliance, 1 Sustainable tourism), 3 additional farms are considering adopting Rainforest Alliance certification based on the diagnostic survey conducted by the project but the diagnostic indicates they will have to invest in substantial changes to their coffee processing infrastructure to comply with the standards on controlling environmental contamination.

Output 4. Recommendations for public policies that support agroforests as a biodiverse land-use

i. Policy brief on supporting biodiversity in agroforests

A policy brief summarizing the research results of the project was developed and distributed. At the end of year 2 and 3 formal presentations were made of the results from the research and development activities with participation from the Council for Protected Areas; Office for Biodiversity, Ministry of Environment, the National Assembly Environment committee, as well as project partner organizations and other invited guests. The director of OTECBIO has helped the project partners to engage with the other Directors of the Council for Protected Areas (CONAP). Also the project organized joint workshops with OTECBIO to present the National Biodiversity Strategy in Alta and Baja Verapaz, Guatemala City and Retalhuleu where the biodiversity strategy has been presented a long side the results from the project.

ii. Public policy makers informed of lessons from research

Policy makers have been informed on the lessons from research on Private Nature Reserves and biodiversity studies that highlight disincentives in conservation policies for private land-owners to engage in conservation. Meetings have been held with the Regional Directors of CONAP for Retalhuleu and Quetzaltenango, and the Retalhuleu Department for Wildlife on the restrictions in Private Nature Reserves for extraction of wood products from the shade trees over the coffee, and general restrictions in the use of certain tree species considered threatened. Considerable tension had developed between local farmers and the CONAP authorities over these issues. Although not fully resolved the project has at least been able to generate a better understanding of the issues between both sides. Also the study conducted by the project was used by the Association for Private Nature Reserves as supporting evidence in that the regulations for Private Nature Reserves should be differentiated from those for National Parks.

The project (ANACAFE) has also had meetings with INAB (National Forestry Institute) as to the forestry regulations for shaded coffee. They have reached agreement that shaded coffee should be registered as forestry areas to facilitate adequate management of the trees. Currently ANACAFE is discussing with CONAP the revision of tree species used in coffee production of from the list of protected species.

For the Sierra Las Minas Biosphere Reserve (that is managed between CONAP and project partner Fundacion Defensores de la Naturaleza) a particular concern is the expansion of rubber plantations in the multi-use buffer zone of the reserve. FDN have used the biodiversity assessments from the project to evaluate with CONAP whether there is justification for restricting rubber plantations in this area.

3 Project Partnerships

The collaborators are the Environmental Coordinator of ANACAFE and ANACAFE field staff based in Retalhuleu; the Sierra Las Minas Biosphere Reserve Director Cesar Tot and his staff of FDN and Margarita Vides and Laura Saenz of the Centre for Environmental Studies and Biodiversity of the UVG. These partners were all involved in the design of the project based on previous collaborative work between these institutions and the project leader. Formal subcontracts have been established between these partners and NRI, and between they administer 70% of the funds of the project and are responsible for the day to day execution of the project. Project meetings are held every six months to review progress against agreed activities and products, and revise and plan the next periods' activities; we hold skype meetings at least once between these meetings, local partners meet periodically between themselves (at least once or twice between six-monthly meetings) and are in frequent e-mail communication for follow-up. We have also hold at least one formal meeting each semester with each of the farmer associations in Palajunoj and the Polochic Organic Producers Association (APODIP) to review advances of the project against previously agreed objectives and activities.

One the main challenges has been changes in personnel. The economist from NRI Diego Naziri left NRI after the second year, although having substantially completed his contribution. The ANACAFE Environment Coordinator Rosa Maria Aguilar who held this position during the first two years left on maternity leave and was replaced by Mariela Melendez in the final year. The collaborating researchers from the University changed at the end of the first year, and the dedicated field technician from FDN also changed at that time. Nevertheless, the partners managed the handing over of responsibilities well with some overlap between personnel and there have been no major set-backs. Changes in personnel have affected our collaboration with the National Biodiversity Office - OTECBIO but we have now established regular contact and exchanges with the new Director, Jose Luis Echeverria, who has also facilitated contacts with other Directors within the Council for Protected Areas (CONAP). Since this time we have had fluid communication and good support from OTECBIO, including supporting the dissemination of the National Biodiversity Strategy in the project areas.

Nevertheless, partners will definitely keep in touch indeed they are partners on other existing and new collaborations. UVG and FDN are partners on an USAID funded Climate Communities and Nature Programme, part of this is to develop a REDD proposal for the Sierra Las Minas Biosphere Reserve. A PhD student from NRI University of Greenwich supervised by the project leader is initiating her research with these partners into the drivers of deforestation and forest conservation.

4 Contribution to Darwin Initiative Programme Outputs

4.1 Project support to the Conventions (CBD, CMS and/or CITES)

The project has collaborated with the Biodiversity Office (OTECBIO) of CONAP who is responsible for the implementation of the CBD commitments for Guatemala. In early May 2014 we conducted joints events (2) with OTECBIO to disseminate the National Biodiversity Strategy and share the results of the project. The project contributes directly to two of the Strategic objectives of the Guatemalan Strategic Action Plan for Biological Diversity namely: Strategy 2 Knowledge and evaluation of biological diversity, and Strategy 3 Sustainable Productive Landscapes with territorial planning for conservation. Similarly the project contributes primarily to Aichi targets 7 on sustainable agricultural management conserving biodiversity, and target 19 improving the knowledge and science base for biodiversity conservation.

4.2 Project support to poverty alleviation

See section 2.2 impact of project on biodiversity and poverty alleviation. We would like to clarify that while the project did work with about 20 large-scale commercial farms the activities with these farms were exclusively related to evaluating biodiversity on these farms and promoting the conservation of that biodiversity. The majority of the farmers we worked with were smallholders – about 300 in total. About 60% were indigenous and the rest had recently lost their indigenous culture.

4.2.1 Programme indicators

- Did the project lead to greater representation of local poor in management structures of biodiversity? No
- Were any management plans for biodiversity developed?
Two producer associations (Producers Association of Palajunoj and Organic Producers Association of Polochic) developed strategic plans that included aspects of conservation
- Were these formally accepted? Both were approved by their board of directors.
- Were they participatory in nature or were they 'top-down'? How well represented are the local poor and women, in any proposed management structures?
Both were facilitated by consultants but in close consultation with the members of the associations. In the case of the Palajunoj Producers Association all members were consulted, draft conclusions were then shared with all members for ratification and the final draft revised and approved by the board of directors. In the case of the Organic Producers Association of Polochic the consultant conducted several meetings with the board members who represent the main communities that are members of the organization; the majority of board members (all bar 1) are Q'eqchi indigenous peoples and a third of the board are women. All discussions were conducted in Q'eqchi in which the consultant facilitator was also fluent; nevertheless the final document is in Spanish (as few people read Q'eqchi).
- Were there any positive gains in HH income as a result of this project?
As indicated above HH income fell dramatically due to the impacts of coffee rust, cardamom thrips and falls in international prices. In a project of this scale it is not feasible to invest in monitoring control groups to compare with participating HH to know whether participating HH were less severely affected. We do know that HH that maintained participation in Fairtrade+Organic coffee production do receive better prices for their coffee, but with restrictions on the actions they can take to control coffee rust.
- How many HH saw an increase in their HH income?
None within the timescale of the project; but 182 families were registered by the end of the project to receive forestry/reforestation incentives and about a dozen families had increased income from eco-tourism.
- How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?
When the 182 families in Polochic start to receive the forest incentives the US\$490-980 received will compensate the fall in farm cash income from US\$6600 in 2011 down to US\$800 in 2014. In Loma Linda the fall in farm income from US\$1470 to US\$754 for 112 HH would have been partially compensated by the increase in gross income from eco-tourism from US\$1670 to about US\$10,000, but this income would have been distributed between about a dozen families who provide guides, manage the accommodation or provide meals.

4.3 Transfer of knowledge

The project has held 4 national meetings (May 2012, Oct 2013, May 2014 and March 2015) to share knowledge generated by the ongoing research projects, including the initial project launch. The presentation of findings on private nature reserves in Oct 2013 was used by partners in the consultations on revision of the protected areas regulations, initial biodiversity study results led to a request to look at biodiversity in rubber plantations in Polochic by the Board of the Sierra Las Minas Biosphere Reserve, the results presented in May 2014 and March 2015 are being used by the Ministry of Environment to support their proposal to GEF for a Coffee Biological Corridor and by FDN and OTECBIO to support the inclusion of agroforestry systems in the Probosques forestry incentives law. The final reports from the project have been given to OTECBIO with the aim they are made public on their web-site. The appropriation by CONAP of the results of the project is shown in their press release after the final project meeting: <http://www.conap.gob.gt/index.php/servicios-en-linea/noticias/723-comprueban-efectividad-de-sistemas-agroforestales-para-conservacion-de-la-biodiversidad.html>
A translation is provided in the supporting information.

4.4 Capacity building

The project has provided training in the following areas:

1. About 185 farmers (33% women) have been trained in organic coffee production focusing on coffee rust control but also including agroforestry system design and soil fertility management. This has the aim of enabling the farmers to manage an environmentally beneficial production system while maintaining their livelihoods. A majority of the farmers are renovating their coffee farms to recover from coffee rust using organic practices, but in one region about 40% have abandoned organic production, and indeed mostly abandoned coffee production altogether. Nevertheless, the viability of organic shaded coffee production is essential to achieve the maintenance of sustainable productive landscapes, a key strategic aim of the national biodiversity plan.
2. The project also trained and advised the boards of the Polochic Organic Producers Association (APODIP) and the Palajunoj Producers Association in the development of their strategic plans that include the aim of ensuring environmentally sustainable production. In Polochic this strategy has included facilitating access by about 180 families (about 40% women) to forest conservation, reforestation and agroforestry subsidies through PINPEP, but which under the agroforestry mode also support re-establishment of small-scale coffee.
3. The Association of Private Nature Reserves and their members have been supported in delivering services to their members including biodiversity studies etc, but also in strengthening their membership in Palajunoj (15 private farms plus 3 communities of about 135 families total) in eco-tourism and environmental education.
4. The project has also collaborated with the Technical Office for Biodiversity of CONAP to promote the national biodiversity strategy; the strategy was presented in two national meetings organized by the project in Guatemala City and one regional meeting in the Verapaces.

4.5 Sustainability and Legacy

In the Palajunoj region ANACAFE will continue to give follow-up to the organic producers associations and the implementation of the Palajunoj Producers Association strategic plan. The Association of Private Nature Reserves of Guatemala will continue to support its growing membership in the area from a stronger base and with greater recognition by farmers. The Ministry of Environment is in the process of negotiating a GEF funded project called Coffee Biological Corridor that will include this region and build upon the results and concepts developed. The Environmental Coordinator for ANACAFE is a permanent position Mariela Melendez will give follow-up to the above actions, although the local project field technician has left one of the achievements of the project is the recognition among the coffee technical staff of ANACAFE that biodiversity is an issue relevant to their work and the development of a working relationship with CONAP and the private nature reserves.

In the Polochic region Foundation for the Defence of Nature as part of their mandate to manage the Sierra Las Minas Biosphere Reserve will continue to support communities in completing their access the PINPEP. FDN and the University of Valle through recently won funding from USAID they are developing income sources from sustainable products and developing a REDD proposal for Sierra Las Minas. The University of Greenwich is financing a PhD student working with these two organizations to study the drivers of deforestation in the region and contribute to the development of Guatemala's REDD programme.

5 Lessons learned

It was an ambitious undertaking to conduct research studies on biodiversity and implement actions to support biodiversity conservation within a 3 year time frame. Furthermore, mid project we had to make a decision as to how to respond to coffee rust, which was a dominant factor in the livelihoods of the households we were working with. We saw no viable alternative than to support organic producers to respond and recover from the impacts of coffee rust, even

though we knew we were unlikely to see the results of this work during the timeframe of the project. This also led to some delays in the implementation of other aspects of the project such as supporting eco-tourism and access to forestry incentives. We requested post-project funding to extend our timeframe and funds to adequately complete the project but this was not successful. When we started our project the conditions for post-project funding recognized that unforeseen events can limit the capacity of a project to complete all its objectives or there may need to be changes in those objectives that require more time to complete. When we needed and requested post project funding the rules had changed to requiring that the outputs and outcomes of the initial funding were completed to be eligible for further funding to achieve new outputs and outcome. We consider that this change in definition of the justification for this funding should be reconsidered.

5.1 Monitoring and evaluation

The outcome or purpose of the project was changed to “Improved *access for farming families to public and private policies that recognize the role of agroforests in meeting the objectives of the CBD*”; the change being the addition of the words in italics; and the indicator “Number of farming families accessing and implementing public and private incentives to conserve biodiversity” elevated from an output indicator to and outcome indicator. The outputs and indicators of the rest of the project were not changed, though given the lack of market opportunities for biodiversity differentiated products Output 3 should have been changed.

Our M&E served to show the changing situation of our target group population but not the impacts of the project actions per se. As indicated above this is because the timeframe for these actions to generate changes at the household level is beyond the timeframe of the project. The tracking of household income provided us with the evidence to justify the change in priority actions of the project towards supporting farmers to recover from coffee rust.

The findings of the base-line and end of project evaluations are provided in the attached report: “Evaluation of changes 2012-2015” and summarized in section 2.2 and 4.2

5.2 Actions taken in response to annual report reviews

The reviewer for Annual Report 1 expressed concern as to how the project was going to respond to the impacts of coffee rust and fall in prices. This was discussed with partners and we responded by changing the activities of the project to attempt to provide farmers with this support in responding to these losses.

The reviewer for Annual Report 2 expressed concern as to how we were going to evaluate the effectiveness of the actions in response to coffee rust i.e. the effectiveness of the control techniques and the trade-offs between rust losses and organic premiums. These are addressed as far as possible at this stage in the report “Evaluation of changes 2012-2015”. A further 2 years monitoring would be necessary to definitively respond as this is the time needed for the coffee plantations to redevelop. The log frame was not further revised as we did not have base-line data to cover any new indicators that might be developed.

6 Darwin identity

The Darwin logo was used in all presentations, on promotional posters, leaflets and reports. The project was a distinct and clear entity (and indeed known to all as the Darwin project). It was presented in the annual meetings with stakeholders as a separate entity and was presented in the media at its launch and final event with the participation of the British Embassy. All the partner organizations, Ministry of Environment, Council for Protected Areas and Association of Private Nature Reserves are familiar with the Darwin Initiative in Guatemala. The project video that was produced also presents the Darwin Initiative.

7 Finance and administration

7.1 Project expenditure

We would be happy to provide a three year summary of expenditure if requested as we feel this would give a clearer indication of the overall use of funds.

Project spend (indicative)	2014/15	2014/15	Variance	Comments (please
----------------------------	---------	---------	----------	------------------

since last annual report	Grant (£)	Total actual Darwin Costs (£)	%	explain significant variances)
Staff costs (see below)			11.8	ANACAFE include payments for services by the private nature reserve association that includes fees with travel and subsistence (hence underspend noted below). Variance also due to adjustments made on costs reported in previous years based on funds sent by NRI rather than full actual costs of partners.
Consultancy costs			0	N/a
Overhead Costs			5.7	N/A
Travel and subsistence			12.6	Adjustments also made on costs reported in previous years based on funds sent by NRI rather than full actual costs of partners; plus some travel costs reported within staff costs – see above
Operating Costs			48.5	Adjustments also made on costs reported in previous years based on funds sent by NRI rather than full actual costs of partners
Capital items (see below)			0	N/A
Others (see below)			49.1	Actual spend takes into account adjustments made on costs reported in previous years based on funds sent by NRI rather than full actual costs of partners
TOTAL			2.1	

Staff employed (Name and position)	Cost (£)
Haggar, Jeremy (Coordinator)	
Gaspar Poz Ramos (Field Technician)	
Maynor Morales (Field Technician)	
LAURA SAENZ DOMINGUEZ UVG Principal Investigator	
GIS-UVG – laboratory	
Cesar Tot, Director Sierra de Minas	
Eldin Sierra, Coordinador del Proyecto	
Laura Saenz Dominguez. Technician	
Ariel Bilivaldo Saucedo. Technician	
Adjustments to final costs of partners having received actual costs rather than reporting on funds sent by NRI	
TOTAL	

Capital items – description	Capital items – cost (£)
NO CAPITAL ITEMS	
TOTAL	

Other items – description	Other items – cost (£)
COMMISSION FOR TRANSFER YEAR III	
COMPAÑIA DE AUTOSERVICIOS COFAL, S.A. // POR SERVICIO DE REPARACION Y MANTENIMIENTO PARA VEHICULO P159BKG INCLUYE MANO DE OBRA Y REPUESTOS	
SERVICE VEHICLE REPAIR AND MAINTENANCE P159BKG INCLUDES LABOR AND PARTS	
COMMISSION FOR RECEIVING TRANSFER second disbursement 37.5% YEAR III	
LUIS HERRERA MORALES GUSTAVO // FOR PURCHASE OF BOXES, OC. 43763.	
COFIÑO STAHL AND COMPANY S.A. // FOR SERVICE TO PICK UP P159BKG, OC. 45521.	
COMMISSION FOR RECEIVING TRANSFER last disbursement	
Jezel, S.A. // FOR PURCHASE OF TONER OC. 39846	
PRODUCTIVE BUSINESS SOLUTIONS (GUATEMALA) S.A. // FOR PURCHASE OF COIL Bond, OC. 40591	
PROJECT AND CONSULTING SERVICES PAY BEAC // DEVELOPMENT OF IMAGES AND MAPS	
LAURA DOMINGUEZ SAENZ DAP2015-0077 // // cartridges, PRINTS POSTERS, OTHER EXPENSES project closure.	
Telephone Service to coordinate project activities. Cheque No. 51	
Computer equipment maintenance. Cheque No. 222	
Computer equipment maintenance. Cheque No. 31	
Maintenance vehicles used in the project.	
Purchase of stationery used in the project.	
Purchase of materials and supplies used in the project.	

25/02/2015 CHQ 9469434 Private Nature Reserves Association of Guatemala Receipt # 616, 35% 8 execution of activities within the lines of action plan of development, Darwin Project by contract CPS 014/2014-2015 (containers for collection, stoves to reduce household fire wood)	
25/02/2015 CHQ 9469434 Private Nature Reserves Association of Guatemala Receipt # 616, 35% 8 execution of activities within the lines of action plan of development, Darwin Project by contract CPS 014/2014-2015 (Promotional video, Palajunoj)	
09/03/2015 CHQ 9469436 Office Depot Invoice # 150000007007, pens and schoolbags purchase used by participating in Darwin project closure.	
09/03/2015 CHQ 9469436 Alchemist Color Factory Invoice # 59 payment for printing and bound for participants in Darwin project closure.	
09/03/2015 CHQ 9469436 Categorica Invoice # 4175, payment for the purchase of 105 ecological bags used for Darwin project closure	
09/03/2015 CHQ 9469436 Categorica Invoice # 4176, payment for the purchase of 45 ecological bags and roll up for Darwin project closure	
09/03/2015 CHQ 9469436 Office Depot Invoice #150000007008, purchase of folder to give to participants for Darwin project closure	
19/16/2014 82866214 International Grocampo Invoice #170 protective bags	
04/06/2014 82866213 La Firmarq Invoice #185867 copper sulphate	
08/12/2014 CHQ 9469426 project posters and handouts	
08/12/2014 CHQ 82866225 Poster printing costs invoice #12104	
11/12/2014 CHQ 9469429 information leaflets Invoice #12104	
Adjustments to final costs of partners having received actual costs rather than reporting on funds sent by NRI	
TOTAL	

7.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
Darwin Initiative	
University of Greenwich/NRI	
ANACAFE	
Defensores de la Naturaleza	
Universidad del Valle	
TOTAL	

Source of funding for additional work after project lifetime	Total (£)
TOTAL	

7.3 Value for Money

Provide comment on the value for money provided by this project. Was it good value for money? What evidence can you provide to support this? Value for money doesn't mean we are looking for the cheapest things, but that you have sought the desired quality at the lowest price.

The project has complemented existing projects managed between the project partners; these include an BMZ financed project Bioforesta (a FDN project) and a USAID financed project Climate Communities and Nature (FDN and UVG plus international conservation NGOs) both have budgets over £1million but are limited to development actions and cannot invest in research. While the development objectives of this project were not completed these projects will be able to give the follow-through necessary to ensure their completion. What these projects were not able to invest in was research to support (or not) whether the initiatives being invested in i.e. agroforestry, sustainably certified production, eco-tourism, private nature reserves etc are effective in conserving biodiversity and what the limitations are for stakeholders in their implementation. This project was able to address some of these issues and give feedback to project strategy and public policy on these strategies.

Annex 1 Project's logframe, including indicators, means of verification and assumptions.

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal:			
Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Purpose: Improved access for farming families to public and private policies that recognize the role of agroforests in meeting the objectives of the CBD	Recognition of Agroforests as biodiverse system in national biodiversity plan of Guatemala Adjustment to private policies on sustainability to reinforce biodiversity aspects	Annual Biodiversity report from Biodiversity Office of National Protected Areas Council of Guatemala Content and access to public policies that support biodiversity on farms Criteria of sustainability certifications for products	Change in government could affect importance of biodiversity in national policy Willingness of private certification agencies to engage in discussions on criteria
Outputs 1. Demonstrate the importance of agroforests in the conservation of biodiversity in lower montane areas of Guatemala	iii. Quantitative assessment of extent of agroforests iv. Landscape biodynamics between agroforests and forests determined	Report to stakeholders Draft scientific publication or thesis	Access to existing mapping data allowed Logistics not affected by natural disasters
2. Identify effective support mechanisms for communities and land-owners to conserve biodiverse agroforest systems	iv. Incentives for farmers to conserve biodiversity identified v. Two producer's associations with strategies to conserve biodiversity vi. Number of producers accessing policies that support on-farm biodiversity	Report of study on farmer decision making Minutes of producer association directors meetings End of project survey of producer adoption	Producer's associations maintain interest in collaboration High coffee prices (or price crash) could create disincentives for maintaining environmental management

Project summary	Measurable Indicators	Means of verification	Important Assumptions
3. Private policies and markets provide greater recognition of biodiversity value of agroforest coffee	<ul style="list-style-type: none"> iv. Private policies/Sustainable certifications reinforce criteria that recognize biodiversity v. Number of farms with sustainable certification vi. Increased sales of sustainably certified products (Rainforest Alliance, Bird Friendly etc) 	<ul style="list-style-type: none"> Certification criteria of sustainable standards Sales figures from farms in associations 	<ul style="list-style-type: none"> Willingness of certification bodies to consider adjustment of standards Economic and market conditions provide incentives for biodiversity friendly products
4. Recommendations for public policies that support agroforests as a biodiverse land-use	<ul style="list-style-type: none"> vii. Policy brief on supporting biodiversity in agroforests viii. Public policy makers informed of lessons from research 	<ul style="list-style-type: none"> Publication of policy brief Minutes of CONAP discussions consider support for agroforests as a biodiverse land-use 	

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Activities (details in workplan)</p> <p>1.1 Integrated map of coffee, agroforests, and forests for two study sites (Univ Valle, Defensores, ANACAFE)</p> <p>1.2 Comparative study of biodiversity in agroforests (coffee, cocoa and cardamom) and forests for key groups (birds & macroinverts) (Univ Valle, Defensores)</p> <p>1.3 Tree populations dynamics between agroforests and forests (NRI, Univ Valle)</p> <p>2.1 Determination of the drivers affecting farmer decision making in managing agroforests (NRI, Univ Valle)</p> <p>2.2 Training of producer organizations in management to promote biodiversity (Univ Valle, Defensores)</p> <p>2.3 Participatory development of conservation strategies with producer associations to enhance biodiversity in their agroforestry systems (ANACAFE, Defensores with support from Univ Valle & NRI)</p> <p>2.4 Evaluation of changes in farmer management of biodiversity and access to support policies (ANACAFE, Defensores)</p> <p>3.1 Development of marketing materials to promote agroforest coffee (and other products) as biodiversity friendly (ANACAFE, NRI, Univ Valle)</p> <p>3.2 Discussion with sustainability standards on recognition of biodiversity (ANACAFE, Univ Valle, NRI)</p> <p>3.3. Support producers associations in complying with sustainability standards (ANACAFE)</p> <p>3.3 Promotion of biodiversity friendly agroforest coffee with UK roasters and traders such as Forest Trade and Twin Trading (NRI)</p> <p>4.1 Engage CONAP/Biodiversity Office on discussion of value of agroforests for biodiversity (Univ Valle, Defensores, ANACAFE)</p> <p>4.2 Field visits to coffee agroforests with CONAP decision makers (ANACAFE, Univ Valle, Defensores)</p> <p>4.3 Publication of policy brief on value of agroforests for biodiversity (All)</p> <p>4.4 Support CONAP/Biodiversity office in recognition of biodiversity in Agroforests in national biodiversity plan (Univ Valle, Defensores)</p>			

Annex 2 Report of progress and achievements against final project logframe for the life of the project

Note: For projects that commenced after 2012 the terminology used for the logframe was changed to reflect DFID's terminology.

Project summary	Measurable Indicators	Base-line status of indicator	End of project Status
Purpose Improved access for farming families to public and private policies that recognize the role of agroforests in meeting the objectives of the CBD	Public and private policies with greater recognition of the contribution of agroforests to biodiversity conservation	Biodiversity strategy oriented towards sustainable and equitable use. But sustainable use in private nature reserves impeded by application of protected areas conditions to agroforests	<p>Awaiting publication of revised regulations for protected areas that may differentiate private nature reserves from national parks.</p> <p>Revision of list of species in danger that are present in coffee plantations is under going.</p> <p>New law Probosques, that includes incentives for agroforestry systems and unlimited financing for forest protection is awaiting approval by the national assembly</p>
	Number of farming families accessing and implementing public and private incentives to conserve biodiversity	<p>All 272 small-scale farms have certified coffee; only 10% of 30 large-scale farms are certified</p> <p>2 small-scale farmer communities (with 147 families) and 5 large-scale farms have private nature reserves</p> <p>2 large-scale farms have accessed PINFOR incentives for forest conservation</p>	<p>An estimated 200 small scale farmers remain certified. Number of large scale farms certified remains the same.</p> <p>Number of large-scale farms declared as private nature reserves has increased to 8; 2 community private nature reserves continue.</p> <p>One community (Loma Linda 110 families) is receiving PINFOR forest conservation incentives and 182 families are registered to receive incentives in Polochic. Payments to large-scale farms have stopped.</p>
Output 1. Demonstrate the importance of agroforests in the conservation of biodiversity in lower montane areas of Guatemala	v. Quantitative assessment of extent of agroforests	<p>Previous assessments of forest cover unable to separate shaded coffee from forest</p> <p>Farm data indicate continued but</p>	<p>Maps generated for both areas that distinguish shaded coffee and other agroforestry systems from forest</p> <p>Forest area conserved, but decline in</p>

Project summary	Measurable Indicators	Base-line status of indicator	End of project Status
		small reduction in area of forest and agroforest on most farms.	coffee agroforest converted to rubber or abandoned
	vi. Landscape biodynamics between agroforests and forests determined	No comparative analyses of coffee agroforests with associated land-uses	Contribution of agroforests to forest connectivity for biodiversity established
Output 2. 2. Identify effective support mechanisms for communities and land-owners to conserve biodiverse agroforest systems	vii. Incentives for farmers to conserve biodiversity identified	Main incentives are: Private Nature Reserves Eco-tourism PINFOR Certification	Private nature reserves and those with eco-tourism have larger forest area and more diverse coffee shade systems.
	viii. Two producer's associations with strategies to conserve biodiversity	Assoc Palajunoj – idea of biological corridor	New strategic plans for Association of Organic Producers of Polochic and Association of Producers of Palajnoj include conservation actions
	ix. Number of producers accessing policies that support on-farm biodiversity	<ul style="list-style-type: none"> - 7 private nature reserves in Palajunoj (community and individual) - 6 community and individual eco-tourism businesses initiated (Palajunoj) - PINFOR 2 farms in Palajunoj have received forest conservation payment 	<p>10 private nature reserves in Palajunoj (8 private farms and 2 community)</p> <p>6 community and individual eco-tourism businesses by numbers of tourists have declined from 854 visitors per year to 458 visitors per year except in community eco-tourism where in one case number of visitors has doubled.</p> <p>One community (Loma Linda 112 families) is receiving PINFOR forest conservation incentives and 182 families are registered to receive incentives in Polochic. Payments to large-scale farms have stopped.</p>

Project summary	Measurable Indicators	Base-line status of indicator	End of project Status
Output 3. Private policies and markets provide greater recognition of biodiversity value of agroforest coffee	ix. Private policies/Sustainable certifications reinforce criteria that recognize biodiversity	Rainforest has strong environmental criteria. Both Fairtrade and Utz have recently (last 2 years) up-dated their environmental criteria. Lack of information to evaluate the impacts of these changes.	Comparative study submitted to be published shows that certified farms provide some environmental benefits, get higher prices, but also increased costs of production (except organic). Conclude higher prices offset the costs of conservation of biodiversity
	x. Number of farms with sustainable certification	Palajunoj: 30 large farms (2 farm certified Rainforest, 1 certified organic); two small-scale producer associations certified Fairtrade (112+37 families) of which organic (63+14 families) Polochic:– 120 in area of study – Panzos Total: 272	Palajunoj: 30 large farms (2 farm certified Rainforest, 1 certified organic); two small-scale producer associations certified Fairtrade (112+14 families) of which organic (61+14 families) Polochic estimated– 72 in area of study – Panzos Total:201
	xi. Increased sales of sustainably certified products (e.g. Rainforest Alliance, Bird Friendly etc)	Fairtrade/Organic: N Alianza 20 tonnes coffee Loma Linda 20 tonnes coffee APODIP 54 tonnes Rainforest Alliance 59 tonnes Total: 153 tonnes	Fairtrade/Organic: N Alianza 6 tonnes coffee Loma Linda 8 tonnes coffee APODIP 36 tonnes coffee Rainforest Alliance 55 tonnes Total 105 tonnes
Output 4. Recommendations for public policies that support agroforests as a biodiverse land-use	iii. Policy brief on supporting biodiversity in agroforests	Biodiversity policy doesn't directly consider agroforestry systems (but rather agriculture and forestry separately)	Policy brief developed summarizing results from study distributed to decision makers.
	iv. Public policy makers informed of lessons from research	N/A	Annual events conducted with decision makers from Ministry of Environment; Council for Protected Areas and Technical Office for Biodiversity.

Annex 3 Standard Measures

We use these figures as part of our evaluation of the wider impact of the Darwin Initiative programme. Projects are not evaluated according to quantity of Standard. That is – projects that report few standard measures are not seen as being of poorer quality than those projects which can report against multiple standard measures.

Please quantify and briefly describe all project standard measures using the coding and format of the Darwin Initiative Standard Measures. Download the updated list explaining standard measures from <http://darwin.defra.gov.uk/resources/reporting/>. If any sections are not relevant, please leave blank.

Code	Description	Total	Nationality	Gender	Theme	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis	None					
1b	Number of PhD qualifications obtained	None					
2	Number of Masters qualifications obtained	None					
3	Number of other qualifications obtained	None					
4a	Number of undergraduate students receiving training	None					
4b	Number of training weeks provided to undergraduate students	None					
4c	Number of postgraduate students receiving training (not 1-3 above)	2	Guatemalan	Male	Biodiversity collection	Spanish	
4d	Number of training weeks for postgraduate students	2					
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(e.g., not categories 1-4 above)						
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above) Farmers (total number people participate at some time is about 500, 300 is the estimate of number who have consistently participated and whose participation has resulted in actions i.e. coffee rust control, accessing	300	Guatemalan	5-60% women depending on event – see training list for	Coffee management, reforestation, eco-tourism, private nature	Spanish or Q'eqchi	Approx 60% of farmers trained were

Code	Description	Total	Nationality	Gender	Theme	Language	Comments
	PINPEP, implementing eco-tourism, becoming private nature reserves). Technical staff	20	Guatemalan	details 90% women	reserves		indigenous
6b	Number of training weeks not leading to formal qualification	2					
7	Number of types of training materials produced for use by host country(s) (describe training materials) Pre-existing materials developed by project leader for analysis of nutrient balance of coffee production, evaluation of pests and diseases and design of agroforestry systems were reproduced and used to train technical staff and farmers	3			Nutrients balance coffee farm; pests and diseases of coffee; agroforestry design	Spanish	

Research Measures		Total	Nationality	Gender	Theme	Language	Comments
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	7	Guatemalan		Producer association (2) and individual farm plans (5)	Spanish	Producer association strategic plans including conservation and individual farm plans for private nature reserves
10	Number of formal documents produced to assist work related to species identification, classification and recording.	2	Guatemalan	Female	Evaluation of Biodiversity; Land use mapping and connectivity	Spanish	See supporting documents
11a	Number of papers published or accepted for publication	1	British	Male	Tree diversity on	English	See below

	in peer reviewed journals				coffee farms		
11b	Number of papers published or accepted for publication elsewhere	None					
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	1	Guatemala		Data base	Spanish	University of Valle and Technical Office for Biodiversity
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	1	UK		Biodiversity records submitted to Predicts Project	English	Data submitted and accepted by UK based international biodiversity data-base
13a	Number of species reference collections established and handed over to host country(s)	1	Guatemala		Ant collection	Spanish	Held at University of Valle
13b	Number of species reference collections enhanced and handed over to host country(s)	1	Guatemala		Cicadellidae	Spanish	Held at University of Valle

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	3	Guatemala	Presenters mixed male and female	Presentation of research findings of project	Spanish	Participation of researchers, Environment ministry, Council for Protected Areas
14b	Number of conferences/seminars/ workshops attended	1	British	Male	Conservation	English	British

	at which findings from Darwin project work will be presented/ disseminated.				Biology		Ecological Society Conference
--	---	--	--	--	---------	--	-------------------------------

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)	None	
21	Number of permanent educational, training, research facilities or organisation established	None	
22	Number of permanent field plots established	80	GPS referenced plots across 2 regions 10 land-uses and 24 farms for monitoring of vegetation structure and invertebrate biodiversity

Financial Measures		Total	Nationality	Gender	Theme	Language	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work	£71,892					

Annex 4 Aichi Targets

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	X
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	X
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	X
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	X
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	X
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	
13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	
14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking	

	into account the needs of women, indigenous and local communities, and the poor and vulnerable.	
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	X
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	X
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	X
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

Annex 5 Publications

Provide full details of all publications and material that can be publicly accessed, e.g. title, name of publisher, contact details. Mark (*) all publications and other material that you have included with this report

Type *	Detail	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers	Available from
(e.g. journals, manual, CDs)	(title, author, year)				(name, city)	(e.g. contact address, website)
Biodiversity and Conservation 24:1175-1194 (journal)	Tree diversity on sustainably certified and conventional coffee farms in Central America. Hagggar, Jeremy; Asigbaase, Michael; Bonilla, Glenda; Pico, Jose; Quilo, Alma; 2015	British	British	Male	Springer	DOI 10.1007/s10531-014-0851-y
Conservation Biology	Environmental and Economic benefits and tradeoffs on sustainably certified coffee farms Jeremy Hagggar, Gabriela Soto, Fernando Casanoves, Elias de Melo Virginio Submitted 2015	British	British	Male		

Annex 6 Darwin Contacts

Ref No	19-018
Project Title	Agroforests: a critical resource of sustaining megadiversity in Guatemala
Project Leader Details	
Name	Jeremy Haggar
Role within Darwin Project	Project Leader
Address	Natural Resources Institute, Chatham Maritime, ME4 4TB
Phone	
Fax/Skype	
Email	
Partner 1	
Name	Mariela Melendez
Organisation	National Coffee Association, ANACAFE, Guatemala
Role within Darwin Project	Environment Coordinator for ANACAFE
Address	
Fax/Skype	
Email	
Partner 2	
Name	Dr. Edwin Castellanos
Organisation	University of Valle, Guatemala
Role within Darwin Project	Head of Centre for Biodiversity and Environmental Studies
Address	
Fax/Skype	
Email	
Partner 3	
Name	Cesar Tot
Organisation	Foundation for Defence of Nature, Guatemala
Role within Darwin Project	Director of Sierra Las Minas Biosphere Reserve
Address	
Fax/Skype	
Email	