



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 about 10 pages in length, excluding annexes

Submission Deadline: 30 April

Darwin Project Information

Project Reference	21-009
Project Title	Biodiversity conservation through poverty alleviation: enabling sustainable forestry in Belize
Host Country/ies	Belize
Contract Holder Institution	University of Oxford
Partner institutions	Belize Forest Department; University of Belize – Environmental Research Institute
Darwin Grant Value	£288,813
Funder (DFID/Defra)	DFID
Start/end dates of project	June 2014/March 2017
Reporting period (e.g., Apr	June 2014 to March 2015
(e.g., Annual Report 1, 2, 3)	Annual Report 1
Project Leader name	Prof. Yadvinder Malhi
Project website/blog/Twitter	Coming soon
Report author(s) and date	Percival Cho
	Research Associate, Oxford University
	Forestry Officer, Belize Forest Department

1. Project Rationale

This project (accepted acronym SUSFOR for sustainable forestry) is addressing the problem of over-harvesting of CITES-listed tropical timber species in Belize. The over harvesting of high-value timber trees in tropical forests leads to other major problems such as biodiversity degradation and reduces forest value which ultimately contributes to increasing vulnerability to deforestation. Another major derivative problem resulting from over harvesting is an overall increase in poverty over the long-term. The sometimes large short-term income gains from over harvesting are soon followed by an exponential decrease in income opportunity for forest dependent people as the stocks of timber and other forest goods and services rapidly decline.

The two timber species in Belize listed on CITES Appendix II, *Swietenia macrophylla* and *Dalbergia stevensonii*, provide economic benefits for two different sectors of the population and occur in geographically distinct sub-regions of the country (Fig. 1). *Swietenia macrophylla* occurs mostly in the limestone forests of the northern half of the country and is exploited on an industrial scale by large timber companies, while Dalbergia stevensonii occurs mainly in the wet, sedimentary soils of the south and is exploited by indigenous forest-dependent communities. For at least 200 years, *Swietenia macrophylla* has been cut from Belizean forests and exported abroad and stocks in natural forests are decreasing rapidly, yet there are

no concrete, science-based management protocols to prevent over-harvesting. More recently, *Dalbergia stevensonii* has been logged heavily from southern forests and exported to China, and stocks have fallen dramatically. The Belize Forest Department and other stakeholders have recognized the need to initiate controls on harvesting that are science-based and provide options for continued income generation. This project is focused on improving the management practices for *Swientenia macrophylla* and *Dalbergia stevensonii*, two of the keystone timber species in Belize, and two of the most valuable in the world, and is contributing to the alleviation of poverty among forest dependent people through the building of capacity for sustainable timber management.



Figure 1. Map of the focus areas of the SUSFOR project. One of the primary objectives of the project is to enable the sustainable forest management of forests which are habitat for S. macrophylla (outlined in red) and D. stevensonii (outlined in blue), using a science-based approach involving the collection of long-term population dynamics data from study plots.

2. Project Partnerships

Oxford University (lead institution) is the scientific lead on the project as well as the administrative lead in terms of the management of DI funds. The university works closely with the Belize Forest Department and the University of Belize – Environmental Research Institute in carrying out project activities. The relationship is particularly solidified through the secondment of a Forestry Officer from the Belize Forest Department to the project as a Postdoctoral Research Associate employed by Oxford University. The secondment officially came into effect in February 2015, thus the officer has recently joined the project full-time. When not in the UK the officer is based at the Belize Forest Department to carry out project activities. The Belize Forest Department has seconded the Forestry Officer to the project for a period of two years (letter of secondment available upon request). The University of Belize -Environmental Research Institute is partnering with Oxford University and the Forest Department to assist in carrying out elements of the project involving taxonomical research for the purposes of building capacity to identify forest tree species and has hired a dedicated Darwin Forest Biologist to work on project activities (contract available upon request). The employment of the Darwin Forest Biologist by the University of Belize - Environmental Research Institute officially began in April 2015, thus the biologist has also recently joined the project full-time.

Project partnerships were forged out of a demand originating from the issues with lack of technical expertise and general knowledge concerning tropical timber species management, tree species taxonomy, and forest productivity in Belize. Each institution is particularly focused on one of these three issues but broadly focused on all three, and all institutions were to some extent involved in the planning the different components of the project. The Belize Forest Department is furthermore also heavily focused on leveraging the contribution of all institutions on the improvement of compliance with the Convention on Biological Diversity and the Convention on International Trade in Endangered Species.

The project lead, Prof. Yadvinder Malhi, visited Belize in March 2015 to meet project partners and other stakeholders. He met with the Science Director at the University of Belize – Environmental Research Institute to discuss project activities, visited the Belize Forestry Department and visited the study areas throughout the country where forest productivity will be studied in detail (detailed itinerary and pictures available upon request). He also gave a seminar for two talks aimed at University of Belize students and other researchers. In April 2015, Oxford University organized a knowledge exchange trip for two researchers from Peru to come to Belize to impart their technical experience with experimental protocols for forest productivity measurements. This work was supported by the Ministry of Forestry through the request for visitor visas for the two Peruvians (visa support letter, itinerary, and pictures available upon request).

3. Project Progress

3.1 **Progress in carrying out project activities**

Overall progress in implementing the project activities for the year 2014/15 has been very good, despite the late start of employment for both the Post-doctoral Research Associate (February 2015) leading the on ground activities and the Darwin Forest Biologist (April 2015) assisting with carrying out project activities. However, it should be mentioned that although the Post-doctoral Research Associate officially joined the project in February 2015 under that title, he was working on carrying out project activities from its start date in June 2014 while a Forestry Officer at the Forest Department. Both project employees are Belizeans affiliated with the Forest Department and the University of Belize - Environmental Research Institute, respectively.

The progress report below is organized by outputs, with a paragraphed summary of the progress of activities under each output.

Output 1 – Training courses in sustainable forestry, yield models, making non-detriment findings and sharing and reporting forest information effectively.

Activity 1.1 - Training of private sector/community forest managers in (a) sustainable forestry standards, (b) forest survey techniques, (c) use of yield models, (d) long-term forest monitoring, and (e) effective reporting and publication of forest research/data.

This activity spans the entire project period, with planned trainings in each year. In the first year, in November 2014 just before he departed to take up the position on the project with Oxford University, a one-day training was carried out by the Post-doctoral Research Associate in standards for the preparation of sustainable forestry annual plans of operation with particular reference to the implementation of CITES guidelines for the sustainable management of Swietenia macrophylla. In regards to Activity 1.1. this training exercise encompassed (a) and (c), above. Training was also provided in the use of the current draft of the yield model for Swietenia macrophylla with the objective being for CITES Scientific Authority members to understand how the vield model works and how it achieves a sustainable harvest, and for concession holders to be able to use the yield model to prepare their harvest plans to be compliant with requirements of CITES for sustainability. The workshop was co-sponsored by the Forest Department since at the time the Post-doctoral Research Associate was with the Department. The 13 trainees who participated represented a cross-sectoral audience from the Forest Department, CITES Scientific Authority and the private sector/industry who hold concessions in Mahogany forests (see agenda and participants list in Annex 4). During the workshop a new CITES-compliant format was developed for the preparation of annual plans of operation for timber concessions. All stakeholders had direct input into the design of the new format. The Post-doctoral Research Associate, following the workshop, had the task of preparing the final draft of the format for distribution to all stakeholders.

The Forestry Department accepted the new format (attached in Annex 5) and subsequently all annual plans of operations for the year 2015 were prepared in this new format. Verbal accounts from plan preparers and from the CITES Scientific Authority members (contact Dr. Elma Kay, chair of the CITES Scientific Authority Mahogany subcommittee at ekay@ub.edu.bz) suggest that the workshop provided a successful outcome in the form of increase understanding about the use of the Mahogany yield model and also resulted in a more logical format for the annual plan of operations which makes year to year monitoring clearer and easier to implement.

A second training for Forest Department staff who carry out forest surveys took place during the months of October to November 2014 over the course of two-days. This training session encompassed (b) above under Activity 1.1. Thirteen Forest Department staff members took part in field and office training sessions aimed at building their capacity to plan and execute small scale sampling in forests to assess species status and to determine whether or not timber harvests are possible. This was the first stage in a series of trainings under the same topic. Photographs of the trainees in the office and the field are attached in the Annex 6.

A third training aimed at indigenous community members and a non-governmental organization involved in long-term forest monitoring was carried out during the months of August to November 2014 over the course of 3 days. This training encompasses sub-activity (d) under Activity 1.1, above. A total of 8 trainees took part in the sessions aimed at providing the necessary skills to work within an intensive long-term monitoring plot, including the use of measurement equipment and the recording of accurate data. Photos of the trainees in the field are attached in the Annex 7.

Activity 1.2 - Develop guidelines, fitted into the national context, for making nondetrimental findings.

A first draft of the Quota Setting and Tracking System which details the non-detriment finding process for Swietenia macrophylla was drafted in the second quarter of 2014 by the Postdoctoral Research Associate for the CITES Management Authority and Scientific Authority. This draft document now serves as the guiding principles for the annual exercise of setting export quotas for the purpose of CITES. The document is attached in Annex 8. This document was recently used to guide the process of setting export quotas for 2015, and was accompanied in April 2015 by a formatted review sheet for use by the CITES Scientific Authority.

Activity 1.4 - Engage stakeholders and set up committee for the sharing of forest information in support of sustainable forest management.

This activity is planned as a continuous process throughout the span of the project. Thus far, discussions have begun at the individual level with local researchers, industry stakeholders and technicians about the composition and function of this committee. Discussions are preliminary at this stage but a formal meeting is planned for June 2015.

Output 2 – A package for improved forest management including: completed population surveys; upgraded forest monitoring network and database; taxonomic manuals; growth and yield models; yield tools; allometric models; carbon flux models; carbon stocks of different forest types.

Activity 2.1 - Conduct population surveys of target species in protected areas, and provide technical input to Belize Forest Department inventory.

During the middle of 2014 a population survey of *Dalbergia stevensonii* was carried out by the Belize Forest Department in all habitats known to possess the species including inside protected areas. The field expenses for this activity represent in-kind contribution to the project from the Forest Department. The assessment was necessary to know the stock of the species in order to ascertain the viability of continued exploitation. The Post-doctoral Research Associate designed the inventory, and provided training and technical supervision for the installation of 249 sample plots to collect data on the species across its known range. Field crews were comprised entirely of indigenous community members who were trained and paid to carry out the survey methods. Botanical specimens were also collected from the plots. Preliminary analysis of the inventory has been completed by the Post-doctoral Research Associate and the results were used to inform recent national policy papers on the way forward regarding the management of *D. stevensonii* for international trade which have been accepted and endorsed by the executive branch of government, the cabinet. Further analyses were requested and these are currently being carried out and reports drafted. Review of population survey data for *S. macrophylla* is currently being performed.

Activity 2.2 - Re-measure and restore 15 long-term forest monitoring plots.

Progress on this activity includes the re-measurement of one plot which was last measured in 1994 and the commencement of re-measurement of another plot (sample copies of field data sheets available upon request - the full dataset for long-term forest monitoring plots is considered confidential). Arrangements have also been made for the remeasurement to commence in two other plots. These four plots are particularly rich in *S. macrophylla* and will provide ample data to add to the growing database on growth, mortality and recruitment of the species for parameterization of the yield model.

Activity 2.3 - Intensively measure 6 long-term forest monitoring plots to estimate carbon flux.

Due to the delay in the start of employment for the Darwin Forest Biologist, work on this activity recently began in April 2015 with training in the measurement protocol. This activity is scheduled as a continuous activity through the life of the project. Two plot experts from Peru visited in April 2015 to commence a 4 week period of training in the implementation of the plot protocol. Thus far work has begun to measure carbon flux through the respiration of fine roots, stem and soil. A video of a training session to make root in-growth cores is available upon request.

Activity 2.4 - Produce taxonomic guide of timber tree species of Belize.

The work is mostly covered by a consultancy to a botanist with expert knowledge of Belize flora. Thus far, the taxonomy in 3 long-term plots have been reviewed with digital photographs and herbarium specimens collected for the production of the tree ID manual. The consultant's report for the first year of the consultancy is being awaited. A copy will be available upon request as soon as it is received from the consultant.

Output 3 – Reinforcement of CITES compliance regarding trade in *S. macrophylla* and *D. stevensonii*.

Activity 3.1 - Provide technical input for the revision of community forestry harvesting plans.

Meetings and visits to the forest in one indigenous community known as Sundaywood were held at the end of 2014 and early 2015 to discuss plans for technical support for improving their forestry operation through the introduction of sustainable forest management (see picture of site visit with community members in Annex 9). This community is currently undergoing land tenure issues and discussions have since been on pause until the community can present clear decisions of how they plan to manage the forest resources on their communal lands. Discussion were also held with a non-governmental organization known as the Sarstoon-Temash Institute for Indigenous Management representing two other indigenous communities engaging in timber harvesting. Plans have been drawn up for how the SUSFOR project can provide technical input to the revision of the forestry harvesting plans. A fourth community has been in discussion with the project as to how technical input can be provided for the revision of their community harvesting plan. All communities possess *D. stevensonii* stocks in their forests and are required to demonstrate that they are harvesting the species sustainably in order to continue to benefit economically from the species. Work is planned to commence in the second quarter of 2015.

Under this output, work has also commenced on improving the transparency and management of CITES export permits for *S. macrophylla*. An online database to support the recently develop Quota Setting and Tracking System (QSETS) has been created by the University of Belize – Environmental Research Institute one of the in country project partners. This database can be visited at <u>http://datahost.eriub.org/export/index</u>.

Output 4 – Improvement in livelihoods of poor indigenous Maya communities involved in community forestry.

Activity 4.2 - Community-based workshops in sustainable forestry and organizational capacity building for forest management.

This activity was scheduled to commence at the very start of the project, with intermittent workshops throughout the life of the project. Due to late starts by both the Post-doctoral Research Associate and the Darwin Forest Biologists these workshops were not carried out at the start of the project in the second quarter of 2014, though preliminary talks have been more recently held with communities. Workshops are planned for the second quarter of 2015.

3.2 **Progress towards project outputs**

The first year of any project is usually one of the most critical periods as the pace for execution of activities is set, and the reputation of the project at achieving its goals is solidified in the minds of stakeholders. The SUSFOR project has achieved the majority of its planned objectives in year 1 despite administrative delays in employment of key personnel. The project is moving at a pace and with a momentum that will lead to the successful completion of project outputs at the close of the project in 2017. The momentum behind the project comes from an in-country demand for the types of data, know-how, and technical capacity that the project offers stakeholders.

Output 1

The indicators which measure progress towards achieving output 1 include the number of training courses held and the number of participants at these courses. For a typical training course in Belize the number of attendees range from 10 to 15, and some of the same attendees participate in multiple training courses. Therefore, the more participants, the more likely that new people are being introduced to the material. A total of 3 training courses involving a total of 34 trainees over the course of 6 days have thus far been carried out for an average of attendance of 11.3 trainees per course. Photographs of trainees and agendas for the courses are provided as evidence of the progress thus far. It is anticipated that short videos will be produced for future training sessions and sign-up sheets will be provided. Trainings have thus far touched on 4 out of 5 topical training themes, and it is envisioned that over the life of the project several other training courses within each theme and across all themes benefiting some of the same as well as other trainees will take place.

Another verification of the progress toward achieving output 1 is the publication of a report for the CITES MA and SA in making non-detrimental findings. This report, which details the non-detriment finding process for *Swietenia macrophylla* is attached in the Annex 8.

Another indicator for output 1 is the number of meetings and attendees at stakeholder committee meetings. The first committee meeting have so far not yet taken place but discussions have begun.

Output 2

The indicators which measure progress towards achieving output 2 include the quantification of population and demographics of target species. Thus far the known population of *D. stevensonii* has been quantified through a field inventory involving 249 plots. Additional supporting data on tree ring-based growth rates for demographic studies have been collected based on samples cut from the ends of harvested logs. A new-long term sample plot has also been established in a *D. stevensonii* rich area to study species regeneration after logging and to assess the rate of population processes such as mortality and recruitment. Full reports and datasets concerning this species are currently considered confidential by the government and so only a short presentation made to the CITES Scientific Authority is included in the Annex 10 as evidence toward measuring the indicators. *Swietiena macrophylla* population assessment has commenced but so far there are no compiled data to report.

Another means of verification of the progress toward achieving output 2 is the existence of database from remeasurements in long-term plots. Data from a recently re-measured plot has been compiled and will be entered into the database of the national Forest Monitoring Network of Belize (FORMNET-B). A summary of this data can be provided upon request.

The quantification of carbon stocks and fluxes have only just begun through the installation of measurement devices in the long-term monitoring plots. Short videos about methodology will soon be available.

The consultancy for the preparation of a taxonomic manual has started and means of verification will be the consultant's report for the first year, which is currently being awaited.

Output 3

The indicators which measure progress towards achieving output 3 include the achievement of CITES compliant timber yields and exports. This indicator can be verified by communications from the CITES Scientific Authority in Belize which issues the notice of approval of export quotas. If contacted the CITES Scientific Authority of Belize may be willing to share the communication regarding the compliance of the 2015 timber yields and export quotas for *Swietenia macrophylla*. Dr. Elma Kay (ekay@ub.edu.bz) is the current chair of the Mahogany Sub-committee and is the contact person. This indicator can also be verified by reports of meetings held with indigenous communities concerning the revision of management plans and implementation of sustainable yield systems to make them CITES-compliant. For evidence of meetings and discussions held thus far, contact can be made with Froyla Salam, Executive Director of the Sarstoon-Temash Institute for Indigenous Management, or Martin Cus, Community Mobilizer (communitymobilizer@satiim.org.bz), whose organization is acting as a

liaison between the SUSFOR project and two communities for work to revise their management plans.

Output 4

The indicators which measure progress towards achieving output 4 include a comparison between baseline and end of project employment surveys. The baseline situation in the indigenous communities to which the SUSFOR project will provide technical assistance, is currently being assessed and a workshop is planned with community members to receive formal input by them. Another means of verification are the new community forestry plans which the SUSFOR project will assist with preparing. It is too early for solid evidence of these indicators to be available, but progress toward achieving them is now moving ahead in the second year of the project.

3.3 **Progress towards the project Outcome**

The outcome of the SUSFOR project is the advancement of institutional and communal knowledge and technical capacity in forest management which supports a shift to sustainable forestry, thereby reducing overharvesting and forest degradation, and promotes long-term economic welfare. The indicators used to measure progress towards achieving this outcome include: (i) by year one there will be a measurable increase in technical capacity for sustainable forestry in the context of CITES in industry and community enterprises as well as the CITES Management and Scientific Authorities; (ii) by year two, logging concessions in Belize begin to calculate CITES-compliant timber yields; (iii) by the end of year two, indigenous Maya communities and private sector enterprise are able to produce CITES-compliant wood for export; (iv) by the end of year two, there are improvements in livelihoods of indigenous Maya communities as it pertains to timber harvesting through diversification of income sources, reduction in overhead costs of logging, and more stable income flow over the long term. The number of indigenous Maya villagers conducting forest surveys as a source of income in their community increases from zero to 18 or more. A new indigenous community is engaged successfully in community forestry.

These four indicators which measure progress toward achieving the outcome can be verified through tangible material. Evidence for progress toward indicator (i) above, the only indicator with relevance specifically to year one, is that community and industry enterprises shift toward using a more comprehensive format for preparing annual plans of operations for timber harvesting. The yield model is used to calculate the sustainable yield for S. macrophylla and the CITES SA is able to efficiently and transparently review data present in annual plans of operations against sustainability criteria in the guidelines for making non-detriment findings. Prior to the SUSFOR project providing technical assistance to the CITES SA, quotas were reviewed superficially because of a lack of tools and models and criteria against which to measure sustainability, and quotas were simply assigned to different companies. This year for the first time the CITES SA was able to produce a report on the quota setting process with specific recommendations made to the CITES MA regarding corrective measures for onward application to logging operations.

Evidence for progress toward indicator (ii) above, which spans to year two, include the application of the *S. macrophylla* yield model for the calculation of sustainable yields by all logging operations. A sample of the annual plans of operations for the year 2015 will demonstrate the use of the yield model by logging operations. Other verifiers of indicator (ii) are scheduled to be achieved later during the life of the project.

Evidence for the progress toward indicator (iii) above, which also spans to year two, include an improvement in the management of CITES export permits which demonstrate the continued ability of community and private sector enterprises to sell their wood products for the export market.

Evidence for the progress toward indicator (iv) above, which also spans to year two, include baseline and end of project employment surveys to demonstrate an increase in diversification of income opportunities relating to the forestry sector in communities. Also there will be a new forestry plan generated for a community.

3.4 Monitoring of assumptions

Outcome level assumptions still hold true up to this point in the project and are not expected to change. For example, although the project manager (Post-doctoral Research Associate) was seconded to the project later than anticipated, it still came through and was endorsed by the Ministry of Forestry and the Ministry of the Public Service. Target indigenous communities, although currently influenced by heavy market pressure for as much wood as can be produced, still remain open to working with the project to ensure their products remain CITES-compliant and eligible for export. There have been no hurricanes hitting Belize in 2014 and a lower than average hurricane season is expected for 2015.

Output level assumptions are also still holding and are not expected to change. Stakeholders have been participating in trainings and are willing to communicate more frequently regarding forest management research. The two target species have not been black listed by the CITES Secretariat, and are not expected to be in danger if all other project activities continue as planned.

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

The SUSFOR project is building Belizean capacity from within to improve the way forests are managed in Belize. A good indicator of this is the successful hiring of two Belizean project staff, one Post-doctoral Researcher and a Forest Biologist. These two project staff are working fulltime on the project to carry the activities forward in conjunction with scientists from Oxford University, government agents from the Forest Department and local researchers from the University of Belize - Environmental Research Institute. Stakeholders are receiving the project well and especially the CITES SA and MA are open to working closely with the project to improve compliance with CITES regulations, as is evident from the recent trainings and technical assistance provided by the SUSFOR project to the CITES MA and SA. In year two and three the project is anticipated to further intensify and broaden its impact as the activities broaden to include work to develop the capacity of indigenous communities to appreciate and manage forests in a way which benefits them economically in the long-term and ensures forests and associated biodiversity remain in and around these villages for a very long time.

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

The SUSFOR project is aimed at providing the technical and scientific support to the Belize Forest Department (CITES Management Authority) and the CITES Scientific Authority to enable them to more effectively implement the CITES convention with respect to the management of *S. macrophylla* and *D. stevensonii*, especially concerning Article IV of CITES. In compliance with CoP14 Doc. 64 (Rev. 1), a set of guidelines for carrying out non-detriment findings have been developed for use by the CITES SA and MA (see Annex 8) and an online database has been created for managing *S. macrophylla* exports in a transparent manner (see http://datahost.eriub.org/export/index).

CBD Articles 7, 8, 10 and 12 speaks to biodiversity identification and monitoring, protection of threatened natural populations, encouragement of sustainable customary use and promotion of public/private sector cooperation in sustainable management. Thus far this project has begun data collection for the creation of a taxonomic guide for tree species identification in the long-term permanent sample plots. The re-measurement of long-term plots have commenced and intensive carbon measurements have begun. Threatened populations of *D. stevensonii* have been surveyed and delimited and recommendations have been drafted for their management and conservation. Indigenous community forestry enterprises are being promoted and supported by technical advice by the SUSFOR project and this will increase in the second year. The project has made plenty strides so far in supporting Belize to meet its objectives under the CBD.

The SUSFOR project is based at the Forest Department, the focal point for both the CITES and CBD conventions. Contact is made with the Department head and deputy head frequently and with other staff members on a daily basis.

5. Project support to poverty alleviation

There are two dimensions of poverty in indigenous forest-dependent communities that the SUSFOR project addresses. First there is the creation of new income opportunities that will result from the work of the SUSFOR project, and there will be greater income stability for communities involved in producing timber as a source of income.

The logging season is currently in full swing and community members are busy cutting trees, but as soon as the season ends in June work will begin to train community members in a sustainable approach to harvesting trees that will be implemented in the 2016 logging season. This approach involves building capacity in communities to carry out their own pre-harvest surveys, representing a possible savings of \$7,000 BZD based on experience relayed to us by the Boom Creek Loggers Association this year. The Boom Creek Loggers Association, an indigenous community forestry enterprise, had paid \$4,000 to an external consultant to conduct pre-harvest surveys and draft up an annual plan of operation, but without the oversight of a third party the individual absconded. The Boom Creek Loggers Association had to hire a second consultant of more reputable character, on advice of the Forest Department southern division, to produce their annual plan of operations at the cost of an additional \$3,000 BZD. The Forest Department southern office in Toledo can be contacted to verify these statements at toledo.fd@ffsd.gov.bz, attn: officer-in-charge Raul Chun. Two other indigenous communities engaging in logging also have to hire external consultants to prepare their annual plan of operation at similar costs, but the tasks involved are relatively simple and community members themselves can carry out pre-harvest surveys and prepare annual plans, thereby saving on costs. These savings represent a direct injection of new income into the communities. The SUSFOR project is working with two other communities besides Boom Creek, and verification of this can be made by contacting the NGO representing the two other communities using the contact information presented previously for SATIIM.

In terms of more stable and longer-term income for the indigenous forest-dependent communities, the SUSFOR project, through the establishment of a sustainable yield system and quota for the communities via their revised forest management plans, will assist in alleviating the hand-to-mouth style of income generation presently plaguing communities and which causes short-term gains but promotes poverty in the long-term.

Notable achievements, in the form of numbers of indigenous community members trained and conducting their own forest surveys, are expect in the second and third quarter of this year 2015.

6. **Project support to Gender equity issues**

This project has hired two staff members one of which is a female in the form of the Darwin Forest Biologist. There is continued involvement of female participants from several organizations including officers of the Forest Department, the Environmental Research Institute and even visiting indigenous plot workers from Peru, one of which is a female. In the promotion of indigenous forestry community enterprises, the involvement of female community members is encouraged. This project does not have any direct gender equality impacts but indirect impacts will include above mentioned effects.

7. Monitoring and evaluation

The SUSFOR project uses its partners as a means of peer-review of its activities to monitor and evaluate the project. To a certain extent, the CITES SA, acts one of the first backstops to project monitoring and accountability as many of the actions of the project relate to the supporting the work of the CITES SA. Based on their successful implementation of the new QSETS manual and the issuance of Mahogany quotas for 2015, the project can be said to have made good achievements this year. But besides the internal peer-review process, the forest research committee (Output 1 - Activity 1.4) which is currently being devised and will shortly be launched, will act as a means of monitoring the milestones of the project and will also help to achieve greater interaction and awareness of performance of the SUSFOR project among stakeholders. Focus group evaluations and committee reports produced by this committee will act as an indicator to measure project contribution to the outcome.

8. Lessons learnt

The major challenge this year was the late hiring of both project staff members. This caused a delay in most but not all activities and the need to initiate a change request to reflect the late hirings and adjusted start dates to some of the activities. An important lesson learned from this experience is that the contribution and commitment of other project partners to fulfilling project tasks and adapting to unforeseen delays is critical for project success. All project partners played important roles in achieving progress toward project outputs this year.

What could have been done differently to ensure greater M&E was the establishment of the forest research committee as one of the first activities scheduled under the project. Perhaps a useful recommendation to others doing similar projects is to begin the M&E process at the commencement of the project.

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

N/A

10. Other comments on progress not covered elsewhere

Already discussed elsewhere in the report is the challenged faced by the late hiring of the Darwin Forest Biologist and the delay in the coming-on-board of the Post-doctoral Research Associate. These late appointments could have significantly delayed project outputs if it were not for the commitment of project partners such as the Forest Department and the University of Belize - Environmental Research Institute and project beneficiaries such as the CITES Scientific Authority. What was beneficial to ensuring the project activities were still carried out was the fact that the desire for the project outputs originates internally from project partners and beneficiaries and thus are seen as very important to complete.

The project doesn't face any particularly great risks this coming year, and so there has been no need to enhance the design of the project over the last year, other than to comply with the change request submitted.

11. Sustainability and legacy

The legacy of the SUSFOR project has been an important consideration from conception stage, and it was decided that all technical staff members of the project would be Belizean - and that there would be a very strong component of capacity building not from non-Belizean experts but from the Belizean staff members to other Belizean stakeholders and beneficiaries. The SUSFOR project has already made a name for itself via the support provided to the CITES SA and to the CITES MA (Forest Department) which recently advised the executive arm of government on policies regarding the management of *Dalbergia stevensonii*. The project's profile in the country is only set to increase this year as joint activities with industry stakeholders are set to take place, which will for the first time establish rules and policies to

further enhance research and monitoring of timber production in Belize. The project has also re-ignited the interest of industry, government and other stakeholders in the long-term monitoring of forest through the restoration and re-measurement of the long-term forest monitoring plots. The project has built a name for itself as the entity providing the technical support to project stakeholders in long-term forest monitoring.

This year the SUSFOR project will commence a series of short videos in all aspects of forestry related to the project that is geared to publication on youtube and dissemination of hyperlinks via email to a stakeholder list.

12. Darwin Identity

The Darwin logo has appeared on all presentations made by project staff domestically and abroad. For example the Post-doctoral Research Associate made a presentation to research staff and students at Oxford University in December 2014 about the SUSFOR project. Presentations have been made to the CITES SA, to the CITES MA and at a public conference for users Geographic Information Systems recently in Belize City. Also the Darwin Initiative programme and logo was publicised and promoted at the first in the series of a Darwin Initiative Seminar Series held by the SUSFOR project to promote the work of the project as well as the Darwin Initiative. The first seminar series was held at the University of Belize with an audience of over 40 people including university students, local and international researchers, conservation NGOs, industry partners, diplomatic corps, and ordinary citizens. The honorary speakers was Prof. Malhi who gave two seminars on his work and the work in Belize to be conducted under the SUSFOR project. Photographs of the first Darwin Initiative Seminar Series and some slides bearing the Darwin logo appear in the Annex 11.

Shortly there will be videos uploaded to the project's Youtube channel (https://www.youtube.com/channel/UCRYsdpeA9VxPr0qinZ7sZEQ/feed) promoting different aspects of the SUSFOR project and the Darwin Initiative. These videos will take a demonstrative approach to show methodology and results so that they attract a wide audience including students, researchers and conservation NGOs. The first video constructed shows the methodology to create dendrobands for measuring tree increment. Another video is being made which shows the process of using the yield model.

Also, all communication including emails bear the Darwin Initiative logo in the signature content at the end of the email message.

13. **Project Expenditure**

Project spend (indicative) since last annual report	2014/15 Grant (£)	2014/15 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				The start of one consultancy has been delayed due to unavailability of consultants.
Overhead Costs				
Travel and subsistence				Local work which involves travel has been delayed due to the late hiring of staff.
Operating Costs				Operating expenses are just picking up due to the late hiring of staff.
Capital items (see below)				A DSLR camera, a laptop and other measuring equipment haven't yet been procured due to lack of availability. Stocks are soon to become available.
Others (see below)				Auditing expenses haven't yet been incurred.
TOTAL	97,863	78,586.25	-19.7	This gap will decrease shortly. A change request was been submitted and approved by Darwin

Table 1	Project expenditure	during the reporting period ((1 April 2014 – 31 March 2015)
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14. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

An outstanding achievement of the SUSFOR project his year has been its contribution to the passing of an executive policy document from the Belizean Cabinet guiding the way forward with respect to the management of *Dalbergia stevensonii* in Belize. This policy document highlights the necessity and importance of the work to be done under the SUSFOR project and acknowledges the technical assistance to be received.

Project summary	Measurable Indicators	Progress and Achievements April 2014 - March 2015	Actions required/planned for next period
<i>Impact</i> Compliance with CITES and CBD is ind strengthening of sustainable forest for the carbon role of forests and in people.	creased in Belize through the management, with greater recognition creased benefits for forest-dependent	The project has assisted the CITES MA and SA with technical advice for carrying out non-detriment findings for CITES-listed timber species and has begun work to develop capacity within indigenous communities for sustainable forest management. Belizean researchers are leading the project activities, demonstrating a building of national capacity from within the project.	
Outcome The advancement of institutional and communal knowledge and technical capacity in forest management supports a shift to sustainable forestry which reduced overharvesting and forest degradation and promotes long- term economic welfare.	Indicator 1 - By the end of year one, technical capacity is increased in private-sector and community forest management organizations as well as CITES MA and SA to carry out sustainable forestry and non- detrimental findings, respectively. Cross-sectoral/institutional knowledge and data sharing in support of sustainable forest management.	A more comprehensive format for annual plan of operations for logging concessions was developed by the SUSFOR project for use by logging companies, and which simplifies the review process by the CITES MA and SA. The new <i>S. macrophylla</i> yield model was demonstrated to logging companies, Forest Department, and the CITES SA, and is now used in the drafting of annual plans of operations. A set of guidelines for carrying out non- detriment findings for <i>S. macrophylla</i> was prepared and is in use by the CITES MA and SA.	Additional training sessions in carrying out lumber conversion and grading assessments as part of the non- detriment finding process is planned. Also, the work programme for year two includes the implementation of a basic tracking system for CITES-compliant lumber. A major highlight of future work is the establishment of the <i>adhoc</i> forest management and research committee to promote knowledge and data sharing toward sustainable forest management.
	Indicator 2 - By year two, logging concessions in Belize begin to calculate CITES-compliant annual sustainable yields and estimate carbon footprint of annual logging. New timber yields reflect an improvement (possible reduction) from pre-project state.	This year, logging concessions have begun to calculate CITES-compliant annual sustainable yields for <i>S.</i> <i>macrophylla</i> and all companies have successfully been assigned export quotas.	Highlight of future work is the development of an allometric equation for use in timber operations to estimate the carbon footprint of logging, and a post harvest assessment methodology that will be used by the CITES MA to assess compliance with logging standards.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2014-2015

	Indicator 3 - By end of year two, indigenous Maya communities and private-sector companies are able to produce CITES-compliant wood for export, with export arrangements between private- sector and community producers in place by year three.	Not applicable in year one.	Highlights include the revision of indigenous community forestry plans to be CITES-compliant and the establishment of non-competitive links between industry and community forestry enterprises for the promotion of sustainably produced lumber from communal forests.
	Indicator 4 - By end of year two, livelihoods of poor indigenous Maya communities improves through additional income generation opportunities, reduction of overhead costs and income security. The number of indigenous Maya villagers conducting forest surveys independently in their communal concessions increases from zero to 18 or more. A new indigenous community is engaged successfully in community forestry.	Not applicable in year one.	Highlights include the production of own annual plans by indigenous community forestry enterprises, with associated benefits toward new income opportunities and long-term income stability.
Output 1. Training courses in sustainable forestry, yield models, making non-detrimental findings and sharing and reporting forest information effectively. Operational committee of stakeholders for the sharing of forest information in support of sustainable forest management.	Indicator 1 - Number of training courses and number of attendees. Indicator 2 - Number of meetings and attendees at stakeholder committee meetings.	Three training courses involving 34 partic preparation of APOs and use of the yield surveys, and on long-term forest monitor committee of stakeholders for forest man this quarter.	pipants have been carried out on: the model, on methodology for forest ing. The establishment of an operational agement and research is planned for
Activity 1.1. Training of private sector/community forest managers in (a) sustainable forestry standards, (b) forest survey techniques, (c) use of yield models, (d) long-term forest monitoring, and (e) effective reporting and publication of forest research/data.		A one-day training was carried out for 13 plans of operations that encompassed (a out over two days for 13 trainees on fores (b). A third training was carried out over monitoring techniques that encompassed are planned for the next period, first up b assessments for CITES-compliance.	trainees on the preparation of annual) and (c). A second training was carried st survey techniques that encompassed three days for 8 trainees on forest I (d). Additional trainings on all topics eing training on post-harvest

Activity 1.2. Develop guidelines, fitted non-detrimental findings.	into the national context, for making	A first draft of the Quota Setting and Tracking System which details the non- detriment finding process for <i>S. macrophylla</i> has been drafted and accepted by the CITES MA and SA for implementation in 2015 onward.	
Activity 1.3. Training of CITES MA and making non-detrimental findings.	d SA in (a) use of yield models, (b)	Scheduled for the next period.	
Activity 1.4. Engage stakeholders and forest information in support of sustai	set up committee for the sharing of inable forest management.	Preliminary talks have been held but this process is a continuous activity through the life of the project, and as such the establishment of the committee is planned for the next period.	
Activity 1.5. Production of videos of tra public awareness.	aining events for dissemination and	Scheduled for the next period.	
Output 2. A package for improved forest management including: completed population surveys; upgraded forest monitoring network and database; taxonomic manuals; growth and yield models; yield tools; allometric models; carbon flux models; carbon stocks of different forest types.Indicator 1 - Population and demographics of target species are quantified.Indicator 2 - Carbon stocks and fluxes of different forest types are quantified.Indicator 2 - Carbon stocks and fluxes of different forest types are quantified.		The known populations of <i>D. stevensonil</i> has been surveyed and quantified, and revisions to final reports are being drafted up. Tree ring growth data and permanent sample plots to study <i>D. stevensonii</i> growth and dynamics have been established. Two long-term plots have been upgraded and re-measured and the forest monitoring database is being updated. The first year of the consultancy for the preparation of a taxonomic manual has been completed and a final report is being awaited from the consultant. The protocol to measure carbon stocks and fluxes from different forest types is being implemented in the 6 intensive plots - with one plot completed thus far. Planned work for the next phase includes continued work on the intensive plots, population survey of <i>S. macrophylla</i> , remeasurement of more long-term plots, and collection of additional botanical vouchers for the taxonomic manual.	
Activity 2.1. Conduct population surver areas.	ys of target species in protected	Population survey of <i>D. stevensonii</i> completed. <i>S. macrophylla</i> survey planned for next period.	
Activity 2.2. Re-measure and restore 1	15 long-term forest monitoring plots.	One plot has been re-measured and a second one begun. Additional plots are planned for re-measurement in the next period.	
Activity 2.3. Intensively measure 6 long-term forest monitoring plots to estimate carbon flux.		Peruvians have visited to impart training in carbon flux measurement protocol and measurements have now begun in one plot and planned in the other five in the next period.	
Activity 2.4. Produce taxonomic guide of timber tree species of Belize.		First year of the consultancy to produce a taxonomic guide has been completed and unidentified trees in 3 plots have been catalogued and botanical vouchers collected. A first draft of the report is being awaited.	
Activity 2.5. Develop growth and yield	models and spreadsheet tool.	Scheduled for the next period.	
Activity 2.6. Develop local allometric m re-analyse nationwide forest inventor stocks.	nodel for carbon stock estimation and y data to estimate forest carbon	Scheduled for the next period.	

Activity 2.7. Produce report on population stocks.	tion assessment and forest carbon	Scheduled for the next period.		
Activity 2.8. Production of film showing companies conducting own forest sur	g methods used by communities and rveys and yield calculation.	Scheduled for the next period.		
Output 3. Reinforcement of CITES compliance regarding trade in <i>S. macrophylla</i> and <i>D. stevensonii</i> .	Indicator 1 - Timber yields and exports comply with CITES.	CITES compliant yields for <i>S. macrophylla</i> were successfully developed for 2015 and were approved by the CITES SA. Ground work toward the revision of indigenous community forestry plans has been carried out in the form of planning meetings with indigenous community representatives including an NGO (SATIIM) which represents two indigenous communities involved in community forestry.		
Activity 3.1. Provide technical input for harvesting plans.	the revision of community forestry	Discussions have been held with indigenous communities, work is planned to commence in the next period.		
Activity 3.2. Provide technical input into the CITES country report, section on <i>S. macrophylla</i> and <i>D. stevensonii</i> .		Scheduled for the next period.		
Activity 3.3. Develop and promote non between private-sector and indigenor	-competitive export facilitation us community forestry operations.	Scheduled for the next period.		
Output 4. Improvement in livelihoods of poor indigenous Maya communities involved in community forestry.Indicator 1 - Baseline and end of project employment surveys compared and analysed. New community forestry plan.		Baseline economic status surveys are being drafted and will be carried out in the next quarter.		
Activity 4.1. Develop database of indig	jenous Maya para-technicians.	Scheduled for the next period.		
Activity 4.2. Community-based workshops in sustainable forestry and organizational capacity building for forest management.		Workshops are planned for the next period, including the initiation of the consultancy for this activity.		
Activity 4.3. Production of film showing community forestry and carbon conse	g social and ecological benefits of ervation.	Scheduled for the next period.		

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Compliance with CITES and CBD is increased benefits for forest-dependent	ased in Belize through the strengthening of ent people.	sustainable forest management, with greate	er recognition for the carbon role of forests
Outcome: The advancement of institutional and communal knowledge and technical capacity in forest management supports a shift to sustainable forestry which reduced overharvesting and forest degradation and promotes long-term economic welfare.	Indicator 1 - By the end of year one, technical capacity is increased in private-sector and community forest management organizations as well as CITES MA and SA to carry out sustainable forestry and non- detrimental findings, respectively. Cross-sectoral/institutional knowledge and data sharing in support of sustainable forest	Indicator 1 - Baseline and end of project Annual plan of operations compared and analysed. Baseline and end of project non-detrimental reports from CITES MA/SA compared and analysed. Committee meeting minutes.	Assumption 1 - Project partners and stakeholders are able to work together and communicate effectively.
	management. Indicator 2 - By year two, logging concessions in Belize begin to calculate CITES-compliant annual sustainable yields and estimate carbon footprint of annual logging. New timber yields reflect an improvement (possible reduction) from pre-project state. Indicator 3 - By end of year two, indigenous Maya communities and private-sector companies are able to produce CITES-compliant wood for export, with export arrangements between private-sector and community producers in place by	Indicator 2 - Film available for dissemination showing communities and companies conducting own forest surveys and yield calculation. Annual plan of operations reflecting sustainable yield and carbon footprint of logging. Peer-reviewed publications. Baseline and end of project timber yield compared and analysed. Post-harvest assessments. Indicator 3 - Baseline and end of project CITES export permits compared and analysed. Committee meeting minutes.	Assumption 2 - Project manager is able to be seconded to the project. Assumption 3 - Target indigenous communities remain open to working with the project.
	year three. Indicator 4 - By end of year two, livelihoods of poor indigenous Maya communities improves through	Indicator 4 - Baseline and end of project employment surveys	Assumption 4 - The government remains a committed signatory to

	additional income generation opportunities, reduction of overhead costs and income security. The number of indigenous Maya villagers conducting forest surveys independently in their communal concessions increases from zero to 18 or more. A new indigenous community is engaged successfully in community forestry.	compared and analysed. New community forestry plan.	CITES and CBD and continues to support forest research. Assumption 5 - Natural disasters such as hurricanes do not impact long- term plots and forest management areas during the project.
Outputs: 1. Training courses in sustainable forestry, yield models, making non- detrimental findings and sharing and reporting forest information effectively. Operational committee of stakeholders for the sharing of forest information in support of sustainable forest management.	Indicator 1 - Number of training courses and number of attendees. Indicator 2 - Number of meetings and attendees at stakeholder committee meetings.	Reports, attendance sheets and videos from training workshops. Published report on making non- detrimental findings in Belize.	Stakeholders are willing to participate in trainings and can communicate effectively and willing to share data.
2. A package for improved forest management including: completed population surveys; upgraded forest monitoring network and database; taxonomic manuals; growth and yield models; yield tools; allometric models; carbon flux models; carbon stocks of different forest types.	Indicator 1 - Population and demographics of target species are quantified. Indicator 2 - Carbon stocks and fluxes of different forest types are quantified.	Databases, reports, spreadsheet tools, allometric models.	<i>S. macrophylla</i> and <i>D. stevensonii</i> are not black-listed before project outputs are realized.
3. Reinforcement of CITES compliance regarding trade in <i>S. macrophylla</i> and <i>D. stevensonii</i> .	Indicator 1 - Timber yields and exports comply with CITES.	CITES country report. Revised harvesting plans. Communications from the CITES secretariat.	Same as above.
4. Improvement in livelihoods of poor indigenous Maya communities involved in community forestry.	Indicator 1 - Baseline and end of project employment surveys compared and analysed. New community forestry plan.	Database of para-technicians. Interview reports. Short videos.	Indigenous communities remain committed to sustainable forest management and are willing to participate in the project.

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)

Activity 1.1. Training of private sector/community forest managers in (a) sustainable forestry standards, (b) forest survey techniques, (c) use of yield models, (d) long-term forest monitoring, and (e) effective reporting and publication of forest research/data.

Activity 1.2. Develop guidelines, fitted into the national context, for making non-detrimental findings.

Activity 1.3. Training of CITES MA and SA in (a) use of yield models, (b) making non-detrimental findings.

Activity 1.4. Engage stakeholders and set up committee for the sharing of forest information in support of sustainable forest management.

Activity 1.5. Production of videos of training events for dissemination and public awareness.

Activity 2.1. Conduct population surveys of target species in protected areas.

Activity 2.2. Re-measure and restore 15 long-term forest monitoring plots.

Activity 2.3. Intensively measure 6 long-term forest monitoring plots to estimate carbon flux.

Activity 2.4. Produce taxonomic guide of timber tree species of Belize.

Activity 2.5. Develop growth and yield models and spreadsheet tool.

Activity 2.6. Develop local allometric model for carbon stock estimation and re-analyse nationwide forest inventory data to estimate forest carbon stocks.

Activity 2.7. Produce report on population assessment and forest carbon stocks.

Activity 2.8. Production of film showing methods used by communities and companies conducting own forest surveys and yield calculation.

Activity 3.1. Provide technical input for the revision of community forestry harvesting plans.

Activity 3.2. Provide technical input into the CITES country report, section on S. macrophylla and D. stevensonii.

Activity 3.3. Develop and promote non-competitive export facilitation between private-sector and indigenous community forestry operations.

Activity 4.1. Develop database of indigenous Maya para-technicians.

Activity 4.2. Community-based workshops in sustainable forestry and organizational capacity building for forest management.

Activity 4.3. Production of film showing social and ecological benefits of community forestry and carbon conservation.

Annex 3 Standard 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
6A	No. people to receive training (out of 34 total participants, there were 21 different people)	8 females 13 males	Belizean	21			21	c. 40
6B	No. training weeks provided			1			1	24
7	Training material inc videos, manuals, guides, tool kits			4				13
9	Report on species population assessment; community forestry management plans							5
10	Tree identification guide.							1
11B	Carbon flux; species population assessment; growth and yield							3
12A	Database of parataxonomists							1
12B	Database of long-term forest monitoring							1
13A	Annual collection of botanical vouchers of unknown species							3
14A	Forest Research and Management Committee workshops							5
14B	Darwin Initiative Seminar Series for the SUSFOR			1				10

 Table 1
 Project Standard Output Measures

	project				
20	4x4 truck; carbon flux equipment				£42,873
17	Forest research and management committee		1		1
22	Permanent forest sample plots		2		17
23	In-kind from local partners in host country				£108,506

Table 2Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g.website link or publisher)
QSETS manual	Manual	Percival Cho, 2014	Male	Belizean	Not published (draft)	*

	Check
Is the report less than 10MB? If so, please email to <u>Darwin-Projects@ltsi.co.uk</u> putting the project number in the Subject line.	x
Is your report more than 10MB? If so, please discuss with <u>Darwin-</u> <u>Projects@ltsi.co.uk</u> 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.	x
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.	
Have you involved your partners in preparation of the report and named the main contributors	х
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	