

**Darwin Initiative Main/Post/D+ Project
Half Year Report
(due 31st October 2017)**

Project reference	22-013
Project title	Conserving pine woodland biodiversity in Belize through community fire management
Country(ies)/territory(ies)	Belize, UK
Lead organisation	Toledo Institute for Development and Environment (TIDE), University of Edinburgh (UoE)
Partner(s)	University of Belize Environmental Research Institute (ERI), Government of Belize Forest Department, International Institute for Environment and Development (IIED)
Project leader	Dr Neil Stuart (UoE) and Mario Muschamp (TIDE)
Report date and number (e.g., HYR3)	HYR3
Project website/blog/social media etc.	http://www.tidebelize.org/project/terrestrial/darwin-initiative-community-fire-management-project http://www.tidebelize.org/darwin-project http://www.belizeconservation.site/
This report has the following Annexes:	Annex 1: Spreadsheet of attendees for all training events Annex 2a and 2b: Fieldsheets from vegetation monitoring training Annex 3: Wildlife monitoring training report Annex 4a and b: Proposed sustainable extraction zones for Payne's Creek National Park Annex 5: Slides from business training

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

This 6 month period has seen progress as planned with the community business development work, and with the collation of information required to propose a sustainable extraction zone for pine and palmetto within Payne’s Creek National Park.

Two new members joined the team in Belize. Fanny Tricone, recently the terrestrial research intern at TIDE, is now supporting the project with the management of all its terrestrial biodiversity monitoring data and she will assist with the development of the sustainable extraction zone plan for PCNP under the direction of project consultant Rick Anderson. Underpinning work to assemble all relevant digital spatial data sets and to produce provisional options for the location of the extraction zone have been completed by Erin Freeman from UoE for her Masters Dissertation submitted in August 2017. Nilcia Xi, a resident of San Isidro, one of the communities targeted by the project, has joined TIDE as an intern supported by the project, as our Community Outreach Officer. She has worked closely with the business groups helping them to develop a grant proposal which, if funded will secure the start-up capital to give each of the community businesses a pathway for growth beyond end of project.

Principal Meetings

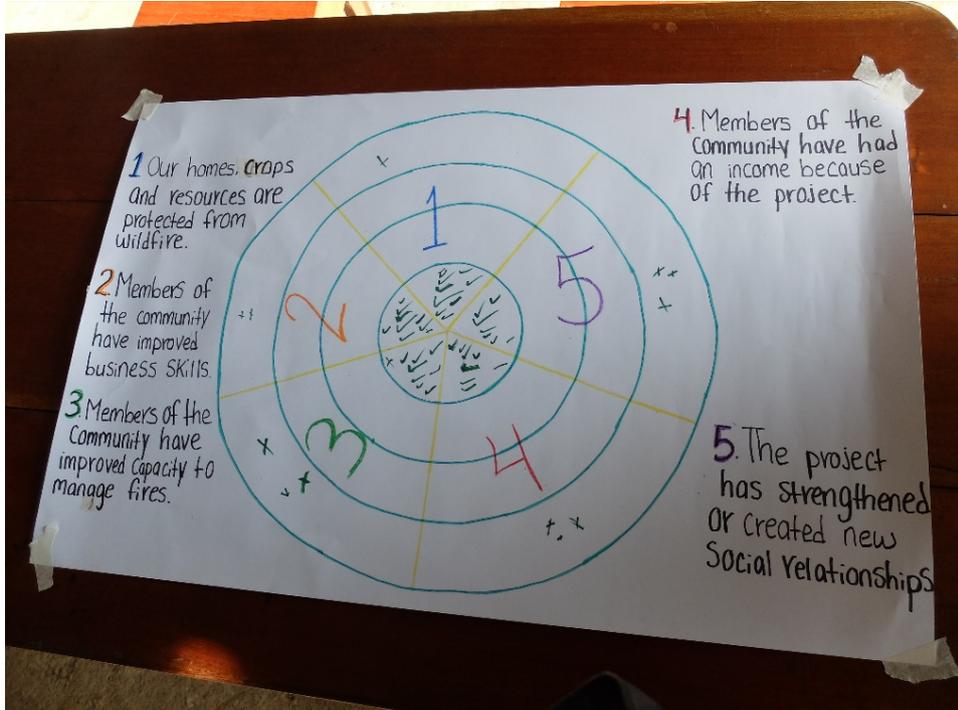
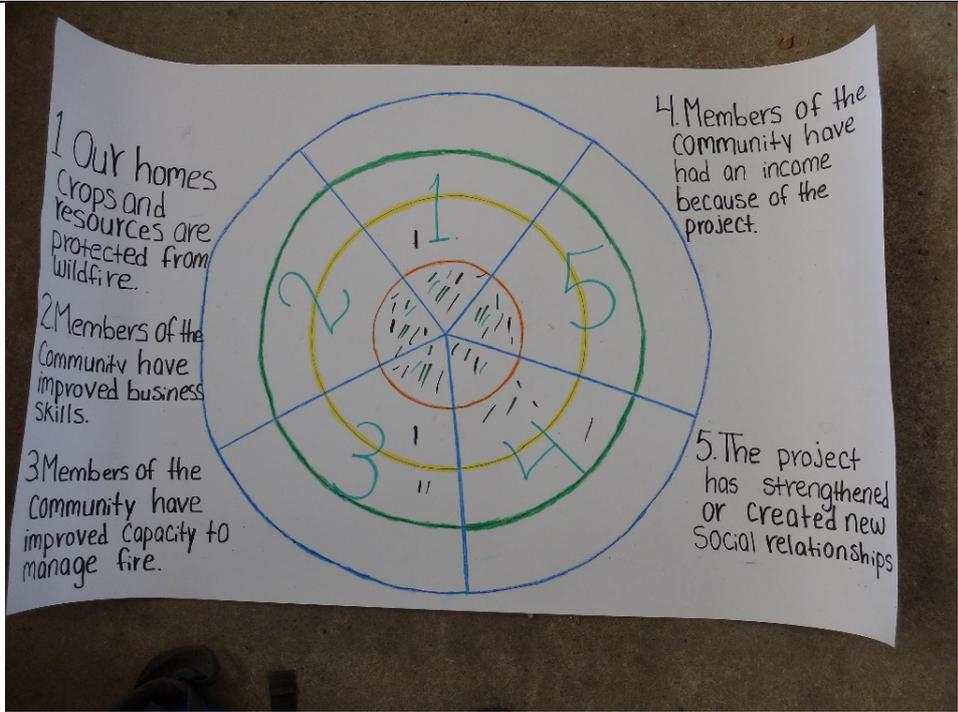
Coinciding with a week of business training by Duncan Macqueen from IIED in the week of 24th July, project partners including project leader Neil Stuart, TIDE Director Celia Mahung and Elmar Requena met at TIDEs office in Belize to review progress on the business development element of the project. A general project planning meeting took place at TIDE on 13th September, attended by Neil Stuart, all the above TIDE staff, Mario Muschamp who leads the fire management activities, and Allan Genus, TIDEs new project manager for our project. Also attending was Fanny Tricone who reported on progress with biodiversity monitoring and SEZ planning. The meeting confirmed activities and budgets for the remaining 6 months of the project.

In the UK, project activity was disseminated through two presentations by project staff to the 20th Annual Meeting of the UK-Belize Association at Oxford University on 7th October 2017.

<http://www.ukbelizeassociation.org/events/uk-belize-association-annual-meeting-2017/>

Interim Project Evaluation

As a means of assessing how the communities perceive the project is performing, a ‘bullseye’ graphical evaluation exercise was carried out in San Isidro and Medina Bank at community meetings on 11/06. Attendees rated the project on a scale of 1 to 4, against 5 key areas in which we aim to provide benefits – 1=reduced risk of wildfire; 2=improved business skills; 3=capacity to manage wildfire; 4=income to community members; 5=stronger community social relationships. Results indicate the majority of respondents from these two communities believe the project is delivering benefits to them in each of these areas. A discussion followed about what the project could do further in each of these key areas in the final six months.



Bullseye evaluation of the project from San Isidro (above) and Medina Bank (below)

Output 1: Biodiversity and woodland resource baselines are established for pine savanna woodlands within Toledo District, by developing a set of monitoring protocols that are adopted nationally

Activity 1.2 Establish 28 0.2 ha permanent plots in PCNP (TIDE, FD)

The 12 pine/ palmetto long-term monitoring plots established in Payne’s Creek National Park in year 2 of the project were revisited for a third time between April and May 2017. This work was carried out by the TIDE rangers together with the terrestrial research intern at TIDE, who has assisted since January 2017 with data management for the project, and 2 community members employed as research assistants. Several of the plots were re-measured during the long-term vegetation monitoring training (see activity 2.1), for which they acted as demonstration plots. During this training course, the participants were required to set up 2 new plots, which have been added to the original 12 for future monitoring. These 14 plots are expected to be sufficient to yield the required data for monitoring the effect of fire upon vegetation in PCNP.

Activity 1.3 Assess distribution, abundance and productivity of palmetto palm in PCNP, DRFR and SBFR (TIDE, FD)

In August, the TIDE rangers and terrestrial research intern visited the 16 palmetto monitoring transects set up earlier in year 2 of the project in Deep River Forest Reserve and Swasey Bladen Forest Reserve. The status of each patch was assessed (burned, unburnt), and the number of dead trees, number of fruiting stalks and average number of seeds per patch was recorded.

Output 2: Training to enhance national capacity to a) monitor savanna biodiversity / resources; b) provide training in best practices for agricultural fire use; c) develop small forest enterprises.

Activity 2.1: Conduct national training workshops in biodiversity monitoring for ~30 PA staff (ERI)

It was decided to divide the budget for this activity across two separate training workshops with different aims. The first, a vegetation monitoring course, was held over 2 days (04-05/04/2017) at the ranger station at Payne's Creek National Park, and was delivered by Rick Anderson, (who designed the pine and palmetto monitoring protocols and fire management training for the project), assisted by Elma Kay of the Environmental Research Institute (ERI), and Fanny Tricone, the terrestrial research intern at TIDE. There were 13 attendees (6 female, 7 male) representing 6 different protected area managing institutions including the Belize Forest Department (see annex 1 for the names and affiliations of participants). The first day of the course covered establishing, monitoring and managing data from long-term vegetation plots, like those set up by the project in Payne's Creek National Park. The second day introduced vegetation sampling along transects, and the management of such data. Annexes 2a and 2b provide the field sheets used as teaching materials for the course. The course was evaluated by means of a 'bullseye' exercise, and verbal feedback. A radio broadcast about this course and about the Darwin fire management project was transmitted on the national radio station LoveFM on 04/04/2017.



Participants on the vegetation monitoring course learning to set up a permanent sample plot (left) and to sample vegetation on a transect (right)

The second training course was held from 26-30/06/2016 in Belmopan at the University of Belize. It was led by Bart Harmsen, Yahaira Urbina, Michael Brakeman, Lisa Jones and Anwah Young of the ERI, and attended by 17 participants (4 female, 13 male) from 10 different organisations (see annex 1 for the attendance list). The five-day course covered mammal monitoring and data management. An initial two classroom-based days introduced camera trapping as a method, whilst a practical day based from the Belize zoo covered camera trap setting, programming and photo retrieval; the fourth day covered computer data entry, database management, use of photo tagging software and an introduction to data analysis with excel, R and GIS, whilst a final classroom-based day provided the opportunity for a discussion of how to coordinate the collection and collation of camera trap data nationwide. Annex 3 provides a fuller report of this training course.



Bart Harmsen leads a session of the wildlife monitoring course, on analysis of camera trap data

Output 3: ≥ 100 community members are trained in fire management (≥ 50 NTFF concession-holders trained in fire management for pine savannas and ≥ 50 farmers trained in best practices in use of agricultural fire)

Activity 3.5: Convene meetings between TIDE, FD, Agriculture Dept., NAVCO and DAVCO to agree improvements to governance of rural fire use (TIDE, FD)

This committee met on 22nd April 2017. The head of the committee German Novelo is now managing a GEF project, and has not been replaced. However, TIDE and members of the Southern Belize Fire Working Group continue to meet and plan to meet with NGOs from the Central Belize Corridor including Monkey Bay Wildlife Sanctuary and the Belize Zoo and Tropical Education Center in October in order to agree how to set up a Central Belize Fire Working Group as the next step towards creating a more extensive and co-ordinated nationwide capacity for fire management in Belize.

Output 4: Options to secure the palmetto seed harvest for community members into the future, through a formal agreement with the forest department and more sustainable harvesting practices, are negotiated

Activity 4.2: 2 At least 5 meetings will be convened informs between TIDE, FD, logging concessionaires and community members, regarding the areas to secure in a possible legal agreement for palmetto extraction.

It has been difficult to progress with this activity and output, because of the presently uncertain market for palmetto in Belize. The palmetto berries are usually harvested and sold from early August to October, however the Belizean buyer of palmetto, Paul Bradley, did not buy last year (for the first time since 2001). This year TIDE has made regular, bi-weekly phone calls to Mr Bradley since May 2017, however he has been unable to indicate whether he will buy, having not had word from his Canadian buyer. Without a market for the palmetto, the villagers will not harvest and there is no motivation for them to discuss sustainable harvesting.

Output 5: Mapping and analysis of site data to inform a future plan for a sustainable extraction zone in PCNP that includes an evaluation of the ecological and socio-economic impacts.

Activity 5.1: Assess potential income from sustainable extraction of pine and palmetto resources in PCNP

This required activity 5.2 to be completed first. Consultant Rick Anderson has obtained the information from local logging concessionaires about actual costs and revenues for locally produced pine lumber in order to complete this economic analysis, together with an assessment of any remediation costs that may be incurred to ensure the extraction does not conflict with the conservation of biodiversity, such as the roosting sites of the protected Yellow Headed Parrots in this area.

Activity 5.2: Assemble information required to enable TIDE to propose a sustainable extraction zone in PCNP, including evaluation of any ecological, socio-economic or biodiversity impacts.

Layers of digital information required to delineate sustainable extraction zone plan have been assembled in a GIS and two potential zoning options have been proposed and mapped on the basis of this geographic information as a Masters dissertation at the University of Edinburgh by Erin Freeman. The analysis combined topographical maps, the pine and palmetto distribution maps created in year 1 of the project, yellow-headed parrot nesting sites as mapped by TIDE's rangers, and information about access to different parts of the reserve, in order to propose 2 possible areas for a sustainable extraction zone. The student visited Belize in May 2017, and ground truthed the proposals with TIDE's rangers and Rick Anderson, who will finalise the proposal for the sustainable extraction zone. This analysis and mapping was completed in August 2017 and was presented to the project team during the progress meeting on 13 September. All digital data sets were delivered to Fanny Tricone the terrestrial intern at TIDE

Annexes 4a and b illustrate the two options produced from the preliminary analysis for locating the proposed extraction zone within PCNP. These options are provisional and will be reviewed further and may be updated in the light of further information produced under activity 5.1 about ecological, socio-economic or biodiversity impacts.

Output 6: Business plans created for ≥3 additional SFEs suitable for PCNP buffer communities.

Activity 6.2: Meetings with community groups to assess interest in developing SFEs (IIED, TIDE)

TIDE has continued over the past six months to mentor and support four business groups (Xibe and the San Isidro Farmers Agroforestry Association (SIFAA) from San Isidro, United Hands in Trio, and Adventures in the Last Corridor (ALC) in Medina Bank). This support includes the activities described below, and has also included 2 small grants of \$BZ500 to each group. This has allowed the groups to take small initial steps over the past 6 months. Xibe plan to open a restaurant, but are beginning with a small snack shack, which they have constructed near the local school in San Isidro to provide break-time snacks once term starts in the Autumn. SIFAA plan to establish agroforestry on their farmland, and in the short-term have constructed a group chicken coop in their village. United Hands plan to raise pigs and have constructed their first pens, and purchased their first pig. ALC hope to provide eco-tours in their community, and working in conjunction with TIDE Tours have developed and tested their first tour package, involving river tubing and caving on two tour groups, who have given them extensive feedback.

Regular progress meetings are held by TIDE with each of the groups, which are periodically open to the community at large, so that everyone can be informed of what the groups are doing. The dates of these meetings are provided below:

Xibe: 19/04, 11/06 (general community meeting San Isidro), 14/06, 12/07, 16/07, 20/09 (this last meeting proposed at time of report writing)

SIFAA: 12/04, 19/04, 09/05, 11/06 (general community meeting San Isidro), 14/06, 16/07, 24/09 (this last meeting proposed at time of report writing)

United Hands: 18/04, 17/05, 25/06 (general community meeting in Trio), 16/07, 20/09 (this last meeting proposed at time of report writing)

ALC: 30/04, 10/05, 11/06 (general community meeting in Medina Bank), 12/07, 30/07, 08/08, 17/09 (this last meeting proposed at time of report writing)



Xibe receive catering equipment with a small investment from the project



SIFAA build their first chicken coop



A meeting in Medina Bank provides an opportunity to update the village on ALC's developing eco-tourism business

Activity 6.3: Iterative training courses on business development, start-up planning, book-keeping (IIED)

The final day in a series of classroom-based business training courses was delivered by Duncan Macqueen from IIED on 24/07/2017 at the Ya'axche Field Station. The course was entitled 'Business Organisation Management Training' and encouraged the groups to consider how they might strengthen the structure and byelaws governing their groups, more clearly define roles for executive members, and improve leadership skills. Annex 5 provides the powerpoint slides from the training. There were 23 participants (see Annex 1 for their names, villages and group affiliations), of which 11 were women and 12 men.



Duncan Macqueen (IIED) delivers the final day of business training to all four groups before meeting each group individually to give them specific assistance.

Activity 6.4: Peer-to-peer exchange with other successful community businesses and market linking visits for community business groups (TIDE, IIED)

There have been several exchanges facilitated by the project in the last 6 months. On 06/05/2017, 7 men from ALC and 4 women and 3 men from SIFAA were accompanied by TIDE on a visit to visit a cacao, cardamom and coffee farm in San Vicente and a cacao farm in Pueblo Viejo. The group members learned and were able to ask questions throughout the visits about the process of growing and marketing these crops, and the experience allowed the group from Medina Bank to see how they might show their agroforestry farms to visitors as part of an eco-tour. Most importantly, the farmers explained to the groups how they learned to grow these crops in a Belizean climate and built up their livelihoods from scratch. These inspiring visits demonstrated to the new business groups what is possible with vision and determination.



Visiting a cacao farm in Pueblo Viejo

On 27/05, 2 women and 6 men from ALC in Medina Bank were taken to Laguna and San Miguel villages to visit the Toledo Ecotourism Association (TEA) guesthouses there. This group is planning to set up a similar guesthouse in Medina Bank, and the visit let them see the accommodation, food and experience offered to tourists by TEA, to learn how the guesthouses are marketed and the experiences and difficulties faced by the groups in Laguna and San Miguel.

On 26/06, a man and woman from the same groups in Laguna and San Miguel, along with a representative from TIDE tours, visited Medina Bank to trial the tour that ALC hope to offer tourists. This included tubing, lunch, a village tour and traditional music demonstration. This was an opportunity for ALC to obtain advice and feedback about the elements of the tour themselves, and for TIDE tours to consider how they might be able to support ALC by marketing the tour.

This was followed up on 27/07, when the Director of TIDE tours Caroline Oliver visited Medina Bank with a test group of 5 European tourists for a second practice tour, involving river tubing and caving. TIDE tours agreed to market the tour, and provided the group with advice about health and safety issues, required equipment, the need for customer service training, and the need for inspection of houses where food would be served. An exchange visit for the ALC group to the Living Maya Experience at Big Falls was also recommended.



TIDE tours trials the tubing with ALC in Medina

The project has also reached out for technical advice for the groups with livestock rearing and agroforestry as part of their business plans, to the District Agriculture Coordinator. TIDE met with him on 11/08 to arrange the logistics of visits to support these groups. TIDE also met with a representative of the government cooperatives department on 05/09 to consider how the groups may register as cooperatives. This representative will meet with the groups in October.

Since September, the project has connected with the local NGO Humana (www.humana-belize.org/), who have agreed to supply trees for SIFAA, and to assist the women from ALC with cooking lessons and support to create vegetable gardens, to provide a basis for cooking meals for tourists staying in the village.

Activity 6.5: Vocational certification for community business members in relevant areas (TIDE, IIED)

7 women from Medina Bank were supported by the project to take their food handlers training and certification on 16/08, and all passed with scores of 70% or higher. This licenses them to sell food to tourists as part of a tour with ALC.



Food handlers training for members of Medina Bank village

Activity 6.6: Formalise license agreement(s) with FD terms for community-run SFE to sustainably use woodland resources (TIDE, FD)

The four groups all required permissions and land from their communities to progress with their business ventures, but the only group which requires permissions from government for their enterprise is ALC. This is because they plan to take tourists to a cave within a Forest Reserve near the village. The group has recently requested permission from Mr Sabido, the logging concessionaire in the area. With his permission they will then apply for permission from the Forest Department, and the National Institute of Culture and History (NICH).

Activity 6.7: Develop business plans for at least 3 community enterprises, and investment proposals for at least 2 community enterprises (IIED)

The draft business plans written by all groups in year two of the project have been updated over the past six months to reflect changes to the structures and aims of the business groups. In year two the project made contact with the UNDP's Small Grants Program in Belmopan, and a grant proposal for a grant of USD\$150,000 is in preparation by TIDE with support of IIED and UE for submission in November. Developing the budgets for this proposal had been led by the project's new Community Outreach Officer working with the groups individually in their communities. The dates of these grant writing sessions are provided below:

Xibe: 13/06, 15/06, 28/06, 13/07

SIFAA: 28/06, 02/07, 11/07

United Hands: 18/07

ALC: 18/06, 04/07

Duncan Macqueen from IIED also spent a half-day with each group on 25-26/07 to review their business plans and budgets for the grant proposal. He also met with the Director of TIDE who are presently agreeing their co-ordinating activity for the remaining 20%. The proposal will then be submitted in September with an expectation of obtaining the result before the end of 2017.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

Output 4 was designed to motivate communities to engage in fire management by giving them a stake in NTFP harvesting, which was expected to be more profitable when fire management actions are adopted. One of the project assumptions (stated at the outset) was that there would continue to be a buyer for the palmetto seed, an NTFP that had been harvested annually by many of the poorest communities throughout Toledo since 2001. Last year, there was a decreased yield of seed attributed to Hurricane Earl and the local buyer did not buy and export. We have maintained regular contact with the buyer, but it seems there will be no purchase of palmetto seed from Belize again this year. This unfortunate situation is outside of our control and its consequence is that there is presently no incentive for communities to engage with us to develop under output 4 the agreements for sustainable harvesting and access for communities to harvest palmetto in protected areas. The failure of the local market for palmetto in 2016 also led to the collapse of the business group in Bladen village which planned to sell palmetto.

The decision last year not to buy palmetto raised our concerns about the risk of linking the livelihoods component of this project exclusively to only business ideas based on palmetto. We discussed this with our mid-term review assessors in November 2016. To reduce reliance on this uncertain market for palmetto over the last year we have adapted the project by diversifying the community livelihood activities so we are now supporting the development of four small community businesses under output 6. All these business ideas rely to a degree on fire management and all encourage the stewardship of local vegetative resources in different ways; they also enable our local NGO to engage communities in trust-building partnerships through which a greater understanding of the need to conserve biodiversity is imparted.

In terms of reflection/lesson learning, adopting a broader strategy of developing a more diverse range of business groups using a variety local resources than just solely palmetto has reduced reliance on this single market and has de-risked the project. The strategy of starting by asking community groups to propose their ideas and interests for a small business, rather than restricting our support to only palmetto-based business ideas, enabled us to engage a greater number and variety of community members and seems likely to produce up to 4 businesses that may reach start-up stage by EoP. If so, this will exceed our expectation for output 6.

If a market is re-established for palmetto in subsequent years, either using the existing buyer or by finding a new buyer and exporter, the report of the survey into the harvesting of palmetto

completed in year 1 will provide necessary baseline information for Forest Department and TIDE to work with the communities to ensure sustainable harvesting practices are followed in future. The information gathered about the value of palmetto is also being analysed this year for designing the sustainable extraction zone for Paynes Creek National Park, where both pine lumber and palmetto seed may be harvested sustainably to support the running of the park.

In summary, whilst some components of output 4 relating to palmetto harvesting cannot be wholly achieved because of factors outside our control, the components completed have yielded data required for output 5. We have successfully adapted the project, expanding the scope and deliverables of output 6 to develop more than three community business ideas, based around local resources with current markets; these will still achieve the purpose of motivating the groups to adopt good fire management practices and to conserve their local vegetative resources while obtaining new livelihood benefits. The small remaining budget for output 4 activities that will not now take place has been redirected to support the expanded programme of activities under output 6. Since the sub-budgets for both these activities are managed by TIDE under the direction of the same manager, there are no changes to sums allocated overall.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS:
YES – changes resulting from mid-term review in Nov 2016 approved by LTS by April 2017.

Formal change request submitted: YES – March 2017

Received confirmation of change acceptance YES – April 2017

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

4. Are there any other issues you wish to raise relating to the project or to Darwin’s management, monitoring, or financial procedures?

This project and Project 22-014 (Maximising Benefits of Marine Reserves and Fisheries Management in Belize) both underwent mid-term reviews in November 2016 by independent experts appointed by LTS. This project (22-013) was assessed to be **“making good progress towards building community capacity for fire management, and looks likely to have a positive impact on both biodiversity and livelihoods as a result”**. A Darwin Learning Note has been produced to be shared with other Darwin projects. This highlights several examples of good practice from both projects, emphasising the positive manner in which the projects have adapted to typical challenges.

<http://www.darwininitiative.org.uk/assets/uploads/2017/08/Information-Note-Belize-MTR-FINAL.pdf>

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R23 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also** be raised with LTS International through a Change Request.

Please send your **completed report by email** to Eilidh Young at Darwin-Projects@ltsi.co.uk . The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 22-035 Darwin Half Year Report**