Department for Environment Food & Rural Affairs

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Illegal Wildlife Trade (IWT) Challenge Fund
Annual Report

To be completed with reference to the "Writing a Darwin Report" guidance: (http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Submission Deadline: 30th April 2020

IWT Challenge Fund Project Information

Project reference	IWT052
Project title	Increasing Capacity for Anti-Poaching and Enhancing Human-Elephant Coexistence
Country/ies	Tanzania
Lead organisation	Southern Tanzania Elephant Program
Partner institution(s)	TAWA, Itigi District Council
IWT grant value	£123,700
Start/end dates of project	01/07/2018-31/03/2021
Reporting period (e.g. April 2019-Mar 2020) and number (e.g. Annual Report 1,2,3)	July 2019-March 2020: Annual Report 2
Project Leader name	Trevor Jones
Project website/blog/social media	www.stzelephants.org
Report author(s) and date	Trevor Jones, Emma Impink, Shafii Msuya, Frank Lihwa, Josephine Smit 30/04/2020

1. Project summary

This three-year project will strengthen the capacity of wildlife authorities in Rungwa-Kizigo-Muhesi Game Reserves (RKM GRs) to combat wildlife poaching and enhance human-elephant coexistence via community beehive fences and community-led elephant monitoring networks and awareness days. STEP will work with protection departments to expand aerial patrol and capacity for integrating ground and aerial patrol data into intelligence-led ranger mobilizations. Coexistence interventions will increase food security, provide additional income, eliminate human and elephant deaths and reduce tolerance for elephant poaching.

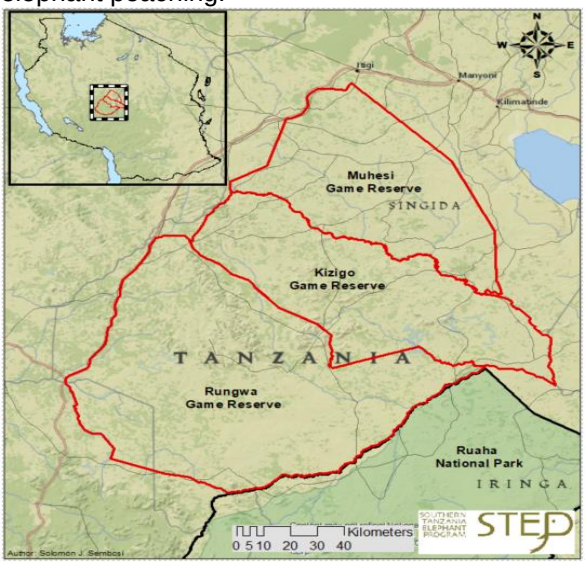

Figure 1. Rungwa-Kizigo-Muhesi Game Reserve with administrative areas

2. Project partnerships

Tanzania Wildlife Management Authority (TAWA) is an important partner for protection and human-elephant coexistence activities in the project area. TAWA are responsible for management of all Game Reserves (GRs) in Tanzania and employ 80 personnel in the Rungwa-Kizigo-Muhesi GRs. STEP signed a five-year MOU with TAWA in January 2018, lasting until December 2022. STEP was invited by TAWA to support protection and HEC activities, specifically aerial monitoring, ground patrol support, conservation technologies, beehive fences, educational materials and activities, fuel for crop protection by rangers, and research (especially surveys to develop an action plan to address HEC). These activities were all specifically requested to STEP by TAWA in letters and in meetings. TAWA has been involved in project planning through MoU Steering Committee meetings and through quarterly reports and meetings where TAWA provides their views on progress and advise on project implementation. TAWA was consulted on STEPs educational/awareness outreach work, specifically to align on education priorities. They have been provided with materials for review and feedback. Under this project, TAWA receives fuel for protection and human-elephant coexistence activities and provides outcome reports to STEP, which has resulted in 54 person-days of crop protection for 13 villages, 30 days of protection patrols, [redacted] (Appendix 2 and 3). A further success of our partnership involves joint strategic planning and maximum coordination of flights with appropriate ranger response on the ground to illegal activity observed from the air. TAWA provides personnel to work with STEP on planning and executing surveillance and to maintain airstrips within GRs as required for aerial operations. TAWA managers and rangers have been trained and are supported by STEP on all technical training including GPS, GIS, mapping, reporting and patrol strategizing. TAWA granted STEP access to some law enforcement records in January 2020 during evaluation of STEP's support to RKM GR.

The Itigi District Council, together with Singida Region, invited STEP to survey, monitor and address human-elephant conflict. The District registers and supports Community-Based-Organizations (CBOs) through technical support, loans and training. In June 2018, the District Council gave a loan of TZS [redacted] to one of the current farmers' groups to support their beekeeping and Village Savings and Loan (VSLA) activities, and the group has completed repayment in July 2019. STEP has been in regular communication with the District Council, sharing quarterly reports and seeking their feedback through regular meetings and phone calls (Appendices 4-6). Apart from the training support shared in the first annual report, between July and August 2019 Itigi District Sport and Traditional Officer collaborated with STEP to support the implementation of community events in Rungwa during Tembo Cup Tournaments. In March 2020, Itigi District Beekeeping Officer collaborated with Tanzania Forest Services Agency and conducted beekeeping training to farmers' groups as part of their ongoing support.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1: Minimum of 4,000 km^2 of Rungwa-Kizigo-Muhesi GRs under regular aerial surveillance, including coordinated ground-air response patrols and analyses of poaching hotspots and trends from aerial data shared with protection departments.

1.1 Aerial surveillance missions coordinated with rapid ground response by rangers

The STEP plane operated for a total of 144 hours across the Ruaha-Rungwa ecosystem (including Ruaha National Park and MBOMIPA Wildlife Management Area), of which 29 hours were aerial missions for Rungwa-Kizigo-Muhesi Game Reserves (RKM GRs). The flight missions in RKM GR were done in collaboration with Rapid Response Ranger teams and covered more than 3494km of linear distance. All flights were based on intelligence from rangers and their established knowledge of critical areas of poaching in dry and wet seasons where the roads are not passable. Mining and timber cutting were the most predominant illegal activities in the reserve during Year 2.

[redacted] The majority of elephant groups observed were far from the hotspot areas of illegal activities, demonstrating the need to reduce illegal activity in these areas to make them safer for elephants.

1.2 Rapid mapping and reporting of aerial missions and rapid response operations

The STEP GIS Department completed the mission reports with maps of areas covered by the pilot team, coordinates of all observations, and recommendations to GR management (Appendix 7). These reports are usually completed and submitted within 48 hours of the pilot team returning to STEP HQ in Iringa at the end of each mission. Two reports, one for each aerial mission, were submitted during this performance period (Appendix 8 and 9).

1.3 Regular spatio-temporal analysis of mission outcomes and anti-poaching strategy shared and discussed with Game Reserve Managers

A review of findings and spatio-temporal patterns of illegal activity is regularly undertaken to target areas for surveillance in subsequent missions. From the outcomes of missions in April and December 2019, STEP's Protection Department advised the rangers to incorporate camera trapping in some of the ground patrols where possible, [redacted]. The Protection Team also helped to develop a monitoring strategy in areas where mining pits were observed.

Output 2: 20 regular ranger patrol days per month throughout remote and key elephant areas of Rungwa-Kizigo-Muhesi GRs, with all patrol data entered and analysed in SMART by Game Reserve staff each month.

2.1 Ranger patrols throughout remote and key elephant areas

[redacted]. Each team is made up of nine rangers and in some months the patrols incorporate camera trapping.

The outcomes of STEP's aerial surveillance missions are used by RKM Management to aid decisions of where to patrol at which time of year. In addition to aerial surveillance missions, STEP also provides fuel support to RKM GRs. This fuel support has resulted in coverage of 3240 km [redacted]

2.2 Patrol maps and reports submitted by rangers to Game Reserve Managers

As reported on previous reports, RKM GRs have moved away from independently reporting and mapping patrols in GIS towards the use of SMART Software for their law enforcement monitoring. Thus, data on patrol are collected by rangers and downloaded into SMART at HQ each month, from which monthly patrol maps are generated. Results from M&E for protection programs in the RKM game reserve revealed that 100% of all the 48 patrols conducted in 2019 were mapped in SMART. STEP submitted maps from the two aerial missions conducted in April and December 2019 to the RKM Manager (aerial data as yet cannot be incorporated into SMART).

2.3 On-going feedback and technical support to rangers from STEP GIS Department

The STEP GIS Department continues to provide technical support to RKM GR rangers when the need arises. In January 2020, STEP's Protection Manager supported two Rungwa officials with techniques to display and map GPS track logs through the use of "Easy GPS Software". This allows the Rungwa Officials to verify the coverage and data sent by other partners who do not map the aerial missions outcomes immediately after completing missions. Other requests during this performance period came from Rangers involved camera trapping and the use of GPS when deploying cameras. The Protection Department also worked with aerial observers to review data collection protocol prior to missions to ensure data quality. The pilot team continued with GPS training for rangers during missions in the field.

Output 3: 80 protection managers and rangers provided with and trained in use of GPS, GIS, and ground-to-air communications, resulting in intelligence-led patrol planning (40 already trained 2016-17)

3.1 Training of protection managers and rangers in GPS for patrols and GIS for mapping

As the RKM GRs have shifted away from the use of GIS to plan patrols and to map patrol outcomes and towards the use of SMART, STEP did not carry out GPS or GIS training in Year 2. Plans to conduct GPS training for aerial observers and other rangers are in place due to the loss of two RKM rangers who were part of the STEP's aerial team at Rungwa who had previously received the training, and arrival of new rangers.

3.2 Training of protection managers and rangers in ground-to-air communications

During this performance period, rangers who were previously trained by STEP continued to participate in aerial missions. However, very unfortunately, [redacted]. Both Paul Mwise and Boniphace Makonda received the ground-to-air communications, aerial observation training and camera trapping training, and led camera trapping operations for the Game Reserve. STEP's Protection Department is planning to conduct another training for RKM Rangers as soon as possible to replace this capacity.

3.3 Intelligence-led patrol planning based on aerial and ground patrol maps implemented

This activity was removed in STEP's latest approved Change Request.

3.4 GPS units, GIS software packages and ground-to-air radios provided to protection managers and rangers

No additional GPS units were provided in this period as a needs assessment indicated that previously supplied units (2017-18) were currently adequate for ranger patrols.

Output 4: 1km-long beehive fences established and managed by registered Community Based Organizations (CBOs) and community elephant monitoring networks established in two villages.

A note that STEP's Human-Elephant Coexistence (HEC) team for Rungwa comprises an HEC Coordinator, HEC Officer, Community Liaison (based in project villages) and Local Elephant Monitors (based in project villages), supported by the Project Coordinator and Programs Manager.

4.1 Support farmers' groups to register CBOs

No new groups were supported in 2019, as approved in STEP's latest Change Request. STEP continues to work with the existing two farmer groups in Rungwa village as expanded upon in 4.4-4.5 Details about STEP's expanded work on beekeeping are elaborated in 5.4 and in the overview of Output 5.

4.2 Train Farmers Groups in CBO Management and Financial Skills

See section 5.1 for additional detail.

4.3 Construct beehive fences with farmer groups in two new villages

This activity was removed in STEP's latest approved Change Request.

4.4 Train farmer groups in fence maintenance and monitoring

STEP conducted one intensive practical training with each of the two existing farmers' groups managing Mkola beehive fence (Maendeleo Farmers Group) and Itaga beehive fence (Amani Beekeeping Group) in January 2020. The group members were practically trained on reinstallation of their fences using iron poles and dummy hives. Reinstallation was conducted to replace former fences which were modified by moving all hives (54 in Itaga and 120 in Mkola) higher in trees to better capture bee colonies. STEP and group members also decided to use iron poles to reduce the cost of maintaining the fences and conserve more trees. Fences were originally built with wooden poles (Eucalyptus), and farmers cut trees to replace poles damaged by termites. Not only did this require significant work by group members, it also contributed to deforestation, a major problem in the villages around Rungwa.

During the same intensive training in January 2020, STEP's Community Liaison was trained to collect beehive occupancy and condition data on a weekly basis, the results of which are shared with the farmers' groups and STEP. Local Elephant Monitors (LEMs) were also trained to collect data about elephant habituation to the re-installed dummy hive-fences in Itaga and Mkola. Currently, monitors walk around the two fence areas twice a week, record any incidence of elephant presence and share data with the STEP Research Team for analysis and reporting.

4.5 Conduct regular monitoring and support visits to beehive fences and farmer groups

STEP's HEC Team conducted monitoring and support visits to the Mkola and Itaga beehive fences in April, July, October, and December 2019. The HEC team also visited Mkola and Itaga beehive fences in January 2020 and participated in the installation of dummy hives along both fences. As mentioned in 4.4, STEP's Rungwa-based team, especially the Community Liaison, makes regular weekly visits to the two farmers' groups. There, he works with group members to monitor both dummy hive fences and beekeeping in their beekeeping site. He visits each group's fence and beekeeping site once a week and collects data on beehive conditions. This data is shared with the wider HEC Team via a Google sheet. This information is used to help with planning and to develop feedback for the Rungwa Team to improve follow up and correct any issues in the field (Appendix 10). In the last Annual Report review, we received feedback to show more operational M&E, which is an integral component to STEP's work in the field. The Dashboard shows how we constantly review key performance indicators to shift our follow up. If group attendance is low one week, we dispatch the Community Liaison to determine why. If beehive occupancy has dropped, we review historical data to see if it is a seasonal shift and then conduct a detailed hive inspection to see if insects or

dampness may have caused bees to abandon hives. If regular VSLA activities show abnormality, a similar approach is taken. We track each loan taken from the VSLA and one month before the repayment deadline, we trigger a repayment follow up plan in which asks for a weekly commitment with detailed information about the source of money for planned payments.

4.6 Train Local Elephant Monitors in Data Collection and GPS

STEP works with four staff (a Community Liaison and 3 Local Elephant Monitors Plus) who are Rungwa residents. In March 2020, our current LEMs signed new contracts to become Local Elephant Monitors Plus, as expanded upon below. Between April and June 2019, the four staff were trained on causes of human-elephant interactions, its impact on both humans and elephants, crop and food store damage mitigation strategies and human safety around the elephants. STEP designed a training kit that was used as a reference (Appendix 11). As a continuation of this training, STEP staff used this content at community events discussed in Activity 4.9.

Between January and March 2020, these staff were trained to perform one-on-one training with farmers during data collection. This is a new responsibility as part of their transition to Local Elephant Monitors Plus. STEP observed that these individuals meet a large number of farmers and interact with them when there is significant potential for education and awareness raising when they have experienced crop loss or damage due to elephants. We decided to optimize on this potential by upgrading their roles. Again, this is an example of operational M&E triggering program redesign. The Local Elephant Monitor Plus included the following elements:

- One day theoretical training focused on the identification of human-elephant hotspot (risk) areas, causes and impacts of human-elephant interaction and strategies for crop, food store and human safety.
- One day practical training in which several farmers were visited and talking points from theoretical training were 'trialled.' The HEC Manager and HEC Coordinator gave feedback on the duration of conversations, making sure that farmers have time to discuss human-elephant interactions and other situational-awareness aspects of 1:1 conversations.

Currently, the four staff conduct training to farmers met during data collection. STEP is planning to expand the Local Elephant Monitor Plus Program to Doroto Village (Ipunguli, Kwamsisi, and Mwakitanda sub-villages), an area of frequent elephant activity. This expansion was planned for February 2020 but the selected areas were not accessible due to heavy rainfall in the Ruaha-Rungwa ecosystem between November 2019 and March 2020. This activity is planned for the next dry season (between May and July 2020). Implementation will also depend on the status of COVID-19 based on national guidelines shared daily, and STEP is monitoring this situation closely.

4.7 Local elephant monitors collect elephant activity data

In Year 2, three elephant monitors continued with data collection on elephant activity for three sub-villages in Rungwa village. Minimum twice per week, elephant monitors walked the existing beehive fences (now dummy hive fences) to check for elephant crossings of the fences. Monitors also walked the Game Reserve boundary to identify fresh elephant trails into village land and surveyed farms for crop damage. Monitors also record damage to food stores by elephants and elephant use of village wells. These data are sent to STEP for entry into a database and shared with STEP's Research Team for analysis. The reports from the analysis are shared with Itigi District Council, village institutions, TAWA, and Tanzania Wildlife Research Institute (TAWIRI).

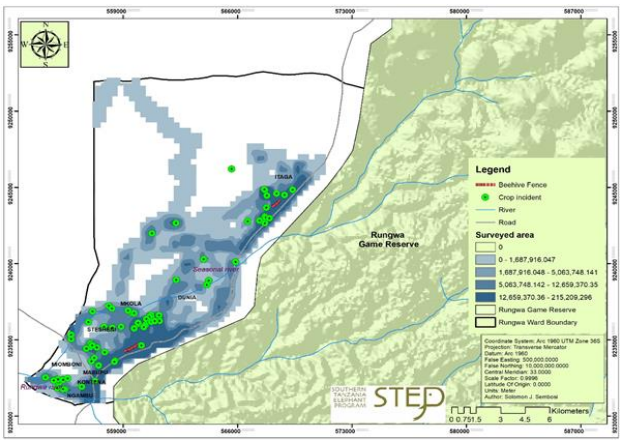

Figure 2. Map showing local monitor survey effort and the location of crop damage incidents

4.8 Train locally-based Community Liaison in HEC mitigation strategies to provide support to farmer groups

See details in 4.6 above

4.9 Raise awareness about HEC Mitigation Strategies at Tembo Cup Football League Matches

STEP conducted community events (including film nights, student trainings, football games, and community trainings) referred to as 'Tembo Cup Week.' The week consisted of education programs with the aim of enhancing understanding about elephant conservation. The football tournament was the cornerstone of Tembo Week. The week attracted more than 5,000 people to football games, reached more than 3,000 students at primary and secondary school training events and exposed more than 2,000 people to evening films (see detailed attendance information in Appendix 12). Attendees came from villages and sub-villages (a small administrative area with a cluster of houses that jointly form a village) to central meeting points for awareness-raising on human-elephant coexistence. The events were designed to explore challenges faced by adults, to prepare youth who hold future decisions in settlement and farming patterns and to keep children safe. Our content focused on the causes and impacts of human-elephant interactions, the benefits of elephants, and ways to stay safe around elephants. Attendees were also trained on crop and food stores mitigation strategies. These events were conducted in collaboration with village leaders from eight villages, the Community Development Officer and Head of Doroto Ranger Post from Rungwa Game Reserve, and several members of the Itigi District Staff: District Referees, the Cultural and Traditional Officer and the District Beekeeping Officer. In August 2019, a streamlined version of Tembo Week was conducted in three villages in Doroto which included trainings and film nights only. The Head of Doroto Ranger Post cooperated with these activities. In 2020, we plan to run a second Tembo Cup in the villages surrounding Doroto, pending COVID-19 developments.

4.10 Raise awareness and disseminate education materials at schools, markets and offices

STEP successfully developed, produced and distributed awareness-raising materials during this reporting period. STEP began material development by conducting household surveys to understand current levels of experience with human-elephant interaction in program areas. During the survey, conducted at the end of 2018 and early 2019, our team collaborated with the Itigi District Game Officer to conduct interviews and consultation meetings with village leaders, school teachers, farmer groups, Itigi District staff, and RGR staff about their understanding, views, and perceived values and risks of the existing interaction in their areas. From this information, STEP created an outline for the booklet, titled *Tembo na Watu: Njia ya Kuishi Pamoja* (Elephants and People: Routes to Coexistence) and hired a local consultant to produce the first version of the booklet. STEP also engaged local cartoonists and graphic designers to support with illustrations and layout. The illustrations communicate key concepts in the booklet and provide step-by-step instructions for implementing crop protection strategies. The booklet text was then reviewed and edited by STEP's HEC team and translated into Swahili. Prototypes of the booklet were brought on field visits to Rungwa and reviewed with secondary students and members of STEP's farmer groups. Illustrations and content were considered for comprehension, relevance and suitability. Finally, STEP printed 400 copies of the *Tembo na Watu* educational booklet and 500 copies of a flier with summarized content from the booklet (Appendix 13). Copies were distributed during Tembo Week to attendees and to each participating village (to primary schools, secondary schools, village offices and clinics). Several copies were given to the Itigi District (Forest Office) and Rungwa Game Reserve Office for their use. STEP has also finalized the design of canvas posters to be used in 2020 Tembo Cup Events and at schools to facilitate knowledge dissemination. The posters give a basic overview of some of the main drivers of HEC, outline some of the consequences that result, and discuss key ways of staying safe around elephants.

Output 5: Development of income-generating opportunities via beekeeping and access to financial services through Village Savings and Loans Associations

5.1 Train Farmers Groups in VSLA Development and Operations

Two existing farmers' groups were formally trained during field visits in April, July, October, and December 2019. In addition to supporting farmers groups' with beehive fences, we also support the running of a village-based financial disbursement scheme known as Village Loan and Saving Association (VSLA). VSLAs are small-scale, community-organized systems that enable people without access to formal financial services to save, invest and access loans. Members buy shares on a weekly basis, which provides the capital for loans. Loans are typically issued to members for three-month periods and are repaid with minimal interest. Members also contribute an agreed-to amount in a social fund that is available to members experiencing emergencies as a loan without interest. The share value, interest rate, and social fund contribution are decided by the group at a meeting prior to the start of each VSLA cycle.

As a part of all visits by the HEC Coordinator, training included a review of CBO management, a review of each group's constitution, and a review of leadership roles and expectations. The two farmers' groups were also given refresher training on financial skills including the use of cash boxes, VSLA booklets for recording share purchases, loan request and repayment rules, and the format and procedures of VLSA meetings. The former and newly elected leaders of Maendeleo Farmer and Amani Beekeeping Group were trained on the importance of separation of powers, best practices for communication between leaders, transparency, and loan issuing procedures. Currently, Maendeleo farmer group members are issuing loans once in a month, monitoring weekly repayment and share purchases among members in their VSLA

meeting, and all records are properly kept and shared with STEP at the end of each week. Amani Beekeeping Group paused its VSLA cycle after running it for 8 months. They are planning to resume share purchasing and repayment before the share-out meeting expected to be conducted on 28th June 2020. This group cycle has been affected by the rainy season in which livelihoods are limited to farming activities only and families are faced with shortage of food. Hence, the little income that exists is prioritized for purchases of food only.

5.2 Support Farmer Cooperatives to establish VSLAs

No new VSLAs were established in Year 2. Between October and November 2019, STEP conducted a VSLA viability study in Rungwa. Each member of the existing VSLAs was individually interviewed to assess the challenges faced, the willingness of members to participate, and to understand potential changes to improve VSLA performance. The findings highlighted a lack of transparency, trust, and accountability as potential threats to the performance of VSLA in Rungwa. Restrictive guidelines that limited the number of shares sold weekly between 1 and 5 were also mentioned as a challenge. Our team met with group members and agreed on a few adjustments that included:

a. Increase compliance on loan issuing procedures and repayment follow up
b. Increase terms of share purchases among members in which members are free to buy more shares per week based on their purchasing power and compensate for low purchasing period of the cycle,
c. Sharing weekly financial summaries before and after the VSLA meeting in order to improve record-keeping, openness, and accountability among members and leaders in each group.
d. Non-beehive fence group members were allowed to join VSLA activity but are not eligible for beekeeping benefits.

Therefore, during the reporting period, STEP has focused more on refining and optimizing existing VSLA operations as opposed to expanding them in Rungwa.

Our HEC team also conducted a VSLA viability study in 3 sub-villages (Kwamsisi, Ipunguli, and Mwakitanda) in Doroto village, the area we have identified for expansion (Appendix 14). We had planned to introduce and establish VSLAs in each of the identified sub-villages between December 2019 and February 2020. However, heavy rainfall made it impossible to reach all three identified locations. STEP is currently monitoring the accessibility of the areas and the status of COVID-19. If the conditions will favour STEP's field operations, we plan to establish three VSLAs in June 2020 with a short cycle that will share-out in December and start a long cycle based on normal VSLA standards. This timing will allow loan cycles to align with key agricultural periods, often the main use of funds from VSLAs in Rungwa.

5.3 Conduct regular monitoring and support visits to VSLAs

STEP's HEC team conducted monitoring and support visits to the Mkola and Itaga VSLA in April, July, October, and December 2019 and January 2020. During this visit, the STEP team checked on record keeping, compliance, and participation of each group member in VSLA activities. STEP insisted on the importance of proper recording, transparency, and loan issuing procedures. Also, STEP's Community Liaison has attended each weekly group VSLA meeting from April 2019 through to the present. He collects data on participation, the number of shares purchased, the number and amount of loans issued, social fund contribution and repayment. He shares these updates with the STEP HEC Team at the end of each week for discussion and feedback, via the aforementioned dashboard. This has helped Maendeleo Farmer Group to improve its compliance. STEP is working to help Amani Beekeeping Group to improve its operation too and we plan to retrain its members on VSLA management standards after the share-out meeting expected to be conducted in June 2020. Apart from the effort explained above and this plan, STEP's team conducted interviews with each member of Amani Beekeeping Group to learn their perspectives on VSLAs and beehives fence maintenance. We also conducted 1:1 training with each member on the importance to comply with group standards including participation in group activities, purchases of shares and planning for loan acquisition and repayment as a way to help them to observe the values that membership in the farmers group adds to their livelihood.

5.4 Train farmers' groups in beekeeping

With traditional beekeepers, STEP is trialling the use of modern hives to study its optimal potential over traditional hives in Rungwa and Doroto village. We have worked with RKM Game Reserve staff and village leaders in Rungwa and Doroto and identified traditional beekeepers who are involved in debarking and cutting trees and hanging their hives either within or along the edge of the reserve. We have identified a list of individuals involved in illegal honey production (cutting down trees to harvest honey), those with a large number of traditional hives, and those who place hives within the RKM GR. STEP has procured and distributed 200 Kenyan Top bar hives (60 in Doroto, 140 in Rungwa). Out of 200, 80 hives have been distributed to 37 individuals from Amani (16) and Maendeleo (21). Each group received 40 hives during this distribution. The remaining 120 hives are being distributed to 40 traditional beekeepers (3 hives each) in Rungwa and Doroto. The traditional beekeepers were selected based on their experience (those with 20 and above hives who have been beekeeping in the area for at least 3 years), residence status (residents

of over 3 years of stay) and willingness to share data on their traditional hives required for learning. The distribution is aimed to equip individuals to be well-positioned for the 'second' honey production season in the region, between May-July and the third season, between November and December. There is a 'first' season which is highly dependent on rainfall and vegetation and is therefore quite seasonal, sometimes occurring between February-March. In 2020, due to heavy rainfall, this 'first season' did not occur. This trial will compare the occupancy rates, abandonment rates and harvest quantities of the three modern hives with three traditional (bark) hives selected by the beekeepers. By exposing beekeepers to newer hive technology, we hope they will see the return on investment for the 'modern' hives as compared to bark hives. By seeing the benefits, we hope this will stimulate demand for modern hives in the region, thereby increasing economic resilience for those who practice beekeeping by increasing their harvest yields.

5.5 Conduct bi-annual monitoring and refresher training for farmers' groups with a professional beekeeper.

Only one refresher training was conducted by the Tanzania Forestry Services (TFS) Zonal Office and Itigi District Beekeeping Officer in March 2020 for Maendeleo Farmers Group. The training focused on ways to increase hive occupancy, the importance of recording the date of occupancy for estimating the time for harvesting, harvesting procedures, and methods for testing honey quality. It also highlighted the importance of conserving tree species potential for beekeeping activities in both community and reserve areas in Rungwa. As occupancy increases for Amani Group, we will evaluate the need for refresher training.

3.2 Progress towards project Outputs

Output 1: Minimum of 4,000 km^2 of Rungwa-Kizigo-Muhesi GRs under regular aerial surveillance, including coordinated ground-air response patrols and analyses of poaching hotspots and trends from aerial data shared with protection departments.

Progress towards this output has been good with successful aerial surveillance missions undertaken. More than 11,648 km^2 were covered by the aircraft in 29 hours of successful missions (compared to 5000 km^2 in Year 1). This increase in coverage despite fewer flight hours resulted from the decision to prioritize limited resources (Assumption 1.1) to increase coverage for hotspots identified from previous aerial missions and ranger intelligence, rather than repeat STEP's established transect blocks. All aerial patrols were coordinated with the Rapid Response Ranger team on the ground, resulting in an effective impact on illegal activities in the Game Reserves. All indicators are measured from data recorded by STEP and aerial observers from the GR trained by STEP.

Output 2: 20 regular ranger patrol days per month throughout remote and key elephant areas of Rungwa-Kizigo-Muhesi GRs, with patrol maps and reports submitted and analysed each month.

Results from M&E meetings between STEP's Protection programs and RKM GRs in January 2020 revealed a minimum of four patrol teams going out on long and short ground patrol missions every month, totalling at least 75 patrol days for the four ranger teams. Moreover, some patrols are now incorporating camera trapping in remote areas and key elephant areas to increase the capacity of rangers to apprehend poachers, based on ground and aerial intelligence. As reported previously all data are gathered and reports are produced in SMART on a weekly and monthly basis.

Output 3: 80 protection managers and rangers provided with and trained in use of GPS, GIS, and ground-to-air communications, resulting in intelligence-led patrol planning (40 already trained 2016-17)

No new rangers were trained in Year 2. Due to the arrival of new rangers and the transfer of several skilled rangers late in Q4 (the result of regular personnel changes), there is a need to conduct additional GPS training in Year 3. STEP will consult with the RKM GR management to select new rangers for this GPS training. There is no plan in place to conduct another GIS training as all maps and reports are created in SMART. No new GPS or Satellite phones were donated to the RKM GRs during this period, GPS needs have been met.

Output 4: 1km-long beehive fences established and managed by registered Community-Based Organizations (CBOs) and community elephant monitoring networks established in two villages.

Two modified beehive fences have been established and are managed by registered Community-Based Organizations in two large sub-villages in Rungwa. These fences are managed by Amani Farmers' Group in Itaga and Maendeleo Farmers' Group in Rungwa. Amani currently has 16 active members and Maendeleo has 21 active members. Both groups continue to operate Village Savings and Loan Associations (VSLAs). This progress is measured through CBO registration documents, weekly attendance tracking (as outlined in the Activity Report) and intensive field follow up. As outlined in 5.4, STEP plans to continue experimenting with the viability of beekeeping through a trial with 'modern' beehives. STEP works with three Local Elephant Monitors (LEMs) in Stesheni, Mkola, and Itaga sub-

villages in Rungwa village. The Itaga Elephant Monitor was replaced during the reporting period through an improved recruitment and interview process. The monitors are extensively trained and survey elephant activity on village land. Monitors actively record data on crop damage, damage to food stores, and elephant use of water sources using standard datasheets and a GPS unit. These are shared with the STEP Research Team and used for analysis. The activity of these LEMs contribute to the on-going operation of community elephant monitoring networks. As outlined in Activity 4.6, STEP plans to hire and train three additional Local Elephant Monitors (now Local Elephant Monitors Plus) to work in three sub-villages around the large village of Doroto, an additional hotspot of elephant activity.

Output 5. Development of income-generating opportunities via beekeeping and access to financial services through Village Savings and Loans Associations

Amani Beekeeping Group currently has 16 active members while Maendeleo Farmers' Group currently has 21 active members. This brings the total number of currently active CBO members to 37. All of these members demonstrate a full working knowledge of beekeeping as a result of their formal training from STEP and District partners as well as the informal training received by STEP's Rungwa-based team and Iringa-based HEC Team on field visits. We have recently distributed 80 improved 'modern' hives to Amani and Maendeleo Groups, respectively, to increase honey production and therefore income generation. Challenges with beehive occupancy, especially within the beehive fence, have led to our change request to reduce the number of beehive fences from four to two and to begin to monitor the number of individuals engaged in beekeeping as an income-generating activity. We have begun distribution of improved 'modern' beehives to 20 individuals from around Rungwa village, selected with the input of RKM GR staff. These are individuals involved in illegal honey hunting within the RKM GR (cutting down trees to harvest wild honey), individuals who place hives in the Game Reserve and individuals who maintain large numbers of 'traditional hives,' made by debarking trees. We have also distributed to an additional 20 people in sub-villages around Doroto, another human-elephant conflict hotspot and an area of heavy illegal beekeeping. This will bring our total number of individuals planned to 77. We aim to expose these individuals to more efficient, 'modern' beehives which are able to produce higher yields and cleaner honey than traditional hives and traditional practices. We intend to conduct M&E to determine how much income is generated through this intervention (including where honey is sold) and as yet determined M&E on how it affects deforestation. We will compare this with baseline self-reported data and perhaps with control farmers if they can be suitably identified. In order to create sustainable demand for these hives as a viable alternative to these destructive and often illegal practices, there must be significant financial advantages. We want to ensure these exist and are perceived before scaling up the initiative. We expect to be able to disaggregate these individuals by gender. This will allow individuals to be well positioned for the 'second wave' of honey production season in the region, between April-June. The first is highly dependent on rainfall and vegetation and is therefore quite seasonal, usually occurring between January-March.

From key informant interviews, we think individual beekeeping activities have income generating potential, albeit highly seasonal (due to rainfall and flowering patterns) and varied from year to year. We think the best way to pursue this activity is through the adoption of modern beehives (made from pine or other farmed trees) that are designed for optimized yields. Traditional beekeeping has considerable income potential but contributes to deforestation. Traditional hives are made from tree bark, collected by stripping a tree of several meters of bark, ultimately killing it. By shifting to modern hives, it could reduce deforestation pressure. Beekeeping in the region is itself threatened by deforestation (and therefore loss of suitable habitat for bee communities) due to expanding agriculture and livestock activities by new arrivals to the area.

While the theoretical value of modern beehives is clear, we have yet to test the question of adoption with farmers: would they be interested in shifting to a new type of hive? We plan to explore this question through our improved hive distribution trial. By distributing hives more widely than just our farmers' groups, it can help to engage more members of the communities around RKM GR, particularly those involved in illegal natural resource use. Often, those farmers who use traditional hives within the RKM GR are those who also illegally hunt honey. Further, Through discussions with the RKM Game Reserve staff and review of their anti-poaching data, individuals involved in illegal beekeeping and honey harvesting within the Game Reserve are often likely to be engaged in other illegal activities, most frequently bush meat poaching and illegal timber harvesting.

While we continue to explore other methods for income generation (including developing a more detailed understanding of agricultural practices and opportunities for optimizing yields), we are increasing our follow up on our existing Village Savings and Loan Associations. Both of STEP's existing VSLAs have had considerable challenges due to leadership and poor compliance. We have re-trained both groups, supervised elections for new leadership and are carefully monitoring their weekly performance. We also hope to start two new VSLAs in/around Doroto village. As discussed in previous reports (and identified by IWT reviewers), financial support for members of these communities is a key component of reducing illegal resource use, including elephant poaching. A 2019 paper published in Global Ecology and Conservation that focuses on drivers of conservation crimes in the RKM GR reinforces the importance of economic components to conservation strategies: "arrested respondents were typically young adult males with

limited alternative sources of income and owning virtually no livestock or land…To address the challenge of conservation crimes in the Reserve, we recommend, among other strategies, the establishment of effective conservation education programs, strengthening law enforcements as a deterrence method and development of entrepreneurship skills to enhance employment." (Hariohay et al, 2019). While we continue to evaluate income generating opportunities, VSLAs can give members access to credit, emergency funds and are a source of income at the completion of each cycle from interest earned from shares.

5.2 Number of Village Savings and Loans Associations (VSLAs) registered (target: four)

STEP formed two Village Savings and Loan Associations in and around Rungwa village. We plan to form two additional VSLAs around Doroto village in Mwakitanda, Kwamsisi and Ipunguli sub-villages. The HEC Team conducted VSLA suitability studies in October 2019 which assessed the baseline level of understanding about VSLA standards (or standards that would be in place for a VSLA such as regular meetings, repayment over several months, compliance to contributions), access to credit (the need for VSLA services), sources of income in the area and the best time of year to start and complete cycles based on predominant economic needs. The results of these viability studies indicate that there is a need for the services provided by a VSLA, especially access to credit during key periods of agricultural expenses.

5.3 Number of people with access to loans from VSLAs (minimum target: 120)

The two existing farmer groups have been supported with considerable follow up over the reporting period. This was due to underperformance in several areas, namely compliance and accountability, as outlined in 5.2 and 5.3 in Section 3. There have been additional circumstantial challenges (local conflict, heavy rainfall) that have further complicated the optimal operation of VSLAs.

Currently the 37 members of Amani Farmers' Group and Maendeleo Farmers' Groups have access to loans from VSLAs (Appendix 15). During the reporting period, Amani has raised capital amounting to [redacted] through the purchase of shares and has issued 14 loans within eight months. These loans are being used to support agricultural activities and the opening of a small grocery business. Maendeleo has raised TZS[redacted]) through the purchase of shares and has issued 13 loans within four months. These loans are being used for investment in agriculture and to support small business operations (see Appendix 15: VLSA Key Updates Records). As outlined, in 5.2, we plan to expand VSLA services to form at least two additional groups in and around Doroto village.

5.4 Growth in capital and loan issuing and repayment rate of VSLAs

During the reporting period, Amani's VSLA had raised TZS [redacted] (£ [redacted] in share capital and disbursed 14 loans valued TZS [redacted] (£[redacted] in 2019 relative to zero loans disbursed in the years since the VSLA began operations in 2017. During an in-depth review and retraining of Amani VSLA, members stated that they were unsure how to plan for repayment and were afraid to take loans. Additional retraining and weekly follow up from the Community Liaison, together with an increased focus on compliance, record keeping, and financial planning has led the group to gain confidence.

Maendeleo's VSLA has raised TZS [redacted] (£[redacted] in capital and have issued 13 loans valued TZS [redacted] (£[redacted] within 4 months of share selling. While this reflects a decrease in size of loans issued from their last cycle, it represents an improvement in compliance and record keeping. The groups' last share out was flawed: several members did not receive their full share out due to many members defaulting on loan payments. It took an increased focus on compliance and record keeping to fully expose some of the challenges with Maendeleo governance. Again, with weekly follow up from the Community Liaison and careful monitoring of records (often necessitating a shift in focus during follow up), the group has gained confidence in the quality of its records.

Within this reporting period, loans totalling TZS [redacted] (£[redacted] have already been repaid by members of the two groups. The two cycles are progressing well, share-outs are expected to happen in June for Amani and December for Maendeleo.

5.5 Honey yield and sales income generated from beehive fences and beekeeping operations

Low occupancy is still a challenge due to lack of consistent food, water, and to the nature of bee populations around Rungwa. This has affected the value proposition of the fence, limiting our ability to affect increased tolerance through economic diversification driven by beehive fences alone. The original theory of change posited that if farmers are able to generate income from the beehive fences (which should also deter elephant movement into fields), it will positively affect tolerance for elephant populations. However, when the hives in the fences do not produce honey, they are not economically viable. Even higher in trees, colonization is affected by prolonged dry season (which contributes to a lack of water and food) and short bursts of heavy rainfall (between November 2019- February 2020) that limit the flowering of plant species depended by bees. Therefore, bees are in constant movement in search of more suitable areas. In both farmers' groups, participants have moved hives higher off the ground in more forested areas to improve colonization. Fences have been reinstalled with dummy hives and metal poles. These changes will help to lower fence maintenance costs, improve colonization (and thereby honey production) and provide insight into habituation to dummy hives. As a result, colonization changes frequently based on these factors. It

increased up to 14% between March and May 2019 and fell to 2.9% between January and February 2020 due to long periods of rain in December 2019. it is slowly increasing but remains low (5.7%). In this context, honey production has contributed only TZS [redacted] (£[redacted] from the sale of 20 litres of honey to livelihood improvement. We expect that farmers' groups will be able to harvest again between May and July 2020. With the new 200 hives distributed to members of Amani, Maendeleo and new beekeepers in and around Rungwa and Doroto villages (40 total), we expect the total harvest will increase in the next harvesting season between October and December 2020. This timeline is due to the fact that initially small colonies (as are many in Rungwa) require at least a year to grow into effective numbers to produce bee products.

3.3 Progress towards the project Outcome

The expected outcome of this project is that enhanced law enforcement capacity in Rungwa-Kizigo-Muhesi will increase [redacted] and reduce elephant poaching, and that community beehive-fence projects will increase incomes, food security and tolerance for elephants. We report on progress against the Year 1 Status update below:

I**ndicator 0.1** The number of illegal activities detected via aerial and ground patrols doubles by project end (relative to 2017 baseline).

[redacted]. Revision of this indicator is necessary as a reduction (rather than an increase as stated in the project logframe) in the detection of illegal activities could be considered a positive impact of protection activities.

Indicator 0.2 Number of ranger mobilizations based on aerial intelligence increases by 100% (relative to 201/7 baseline).

10 ranger mobilizations based on aerial intelligence occurred in 2019, versus a baseline of 10 in 2017 and 18 in 2018. The decrease in the number of ranger mobilizations is due reduced accessibility of Game Reserve areas due to an extraordinarily wet rainy season (rainfall in 2019/2020 was almost double the average annual rainfall due to the Indian Ocean Dipole) and a reduction in STEP's flight hours in Year 2 relative to Year 1.

Indicator 0.3 The number of poacher arrests made per year in each Game Reserve doubles by project end (relative to 2017 baseline).

[redacted]

Indicator 0.4 Poaching declines measured in a 50% reduction in the number of illegally killed elephant carcasses detected on aerial and foot patrols.

STEP's pilot team did not observe fresh carcasses on aerial missions during this performance period, a very positive indicator of reduced elephant poaching. [redacted] TAWIRI aerial census data from 2018 (published in late 2019) showed a 33% reduction in the number of elephant carcasses estimated for the Ruaha-Rungwa ecosystem, from 2863 in 2015 to 1892 in 2015, providing further evidence that security for elephants has increased. [redacted]

Indicator 05.33% of households in project area report improved food security as a result of crop protection from beehive fences

As reported in our Year 1 Annual Report, the Baseline Survey conducted in 2018 found that 46% of households were food insecure. This outcome indicator will be re-measured in 2021 to assess the impact of crop and food store protection methods implemented by STEP.

Indicator 0.6 20% increase in household income levels from beekeeping among project beneficiaries

The Baseline Survey conducted in 2018 measured household income using indicators to assess relative levels of poverty rather than calculating household income quantitatively. During the project period, TZS [redacted] (£[redacted] was earned by the 16 members of Amani Beekeeping Group, relative to £[redacted] earned by members of that group in 2017. However, we did not quantitatively measure baseline income from group members from beekeeping at inception. Maendeleo Farmers' Group has not yet harvested any honey since constructing their fence in 2017. While income was generated from beekeeping during the project period, it has not proved to be the singular source of income that we had hoped. We have increased the number of 'modern' hives for each beekeeping group with the aim to increase honey production. We have also distributed beehives to other beekeepers in the villages surrounding RKM GR in part to increase household income levels. However, as outlined previously, membership in VSLAs also generates income, currently more than is generated by beekeeping. If we look at the number of loans disbursed by groups, 87% of the members Amani and 50% of the members of Maendeleo have taken loans, enabling them to make investments in agriculture and in other critical household expenditure. In the case of both groups, over £[redacted] has been repaid, potentially indicating increased income generated from this project, working towards improved household livelihoods in Rungwa.

Indicator 0.7 50% increase in the number of farmers and village leaders showing tolerance of elephants

The 2018 baseline survey found that 30% of respondents agree with the statement that “there is a good relationship between people and elephants in our village.” In Year 1, we conducted awareness-raising events, held a community leader’s workshop and distributed specifically-developed awareness-raising materials. With a plan to continue these activities in 2020, this indicator will be re-measured in 2021 to assess the impact of education, awareness-raising, and crop protection activities implemented under this project.

Indicator 0.8 Zero human deaths resulting from elephants due to increased safety awareness and availability of elephant deterrents.

[redacted]

Indicator 0.9 Zero elephant mortality from retaliatory killings or Problem Animal Control.
In 2019, no elephants were killed by retaliatory killing or Problem Animal Control.

3.4 Monitoring of assumptions

Assumption 0.1 STEP will be able to maintain its established and trusted relationships with Game Reserves senior management.
Comment: This assumption continued to be valid through Year 2 (see Activity Report 1-3 for evidence).
Assumption 0.2: A dedicated team of protection managers and rangers will remain motivated to utilize and manage remote surveillance technology.
Comment: Enthusiasm and cooperation on using this technology remains good, although there can be scheduling challenges related to availability of Game Reserve staff versus their many demands.
Assumption 1.1: The plane will operate at full capacity throughout the project with only minor maintenance requirements of maximum three months down-time per year. We assume that the plane will be able to make up to operate 120 hours per year.
Comment: Our assumption of 120 hours of flights per year was not valid in Year 2. The STEP plane operated for a total of 144 hours across the Ruaha-Rungwa ecosystem (including Ruaha National Park and MBOMIPA Wildlife Management Area) in 2019, of which 29 hours were in Rungwa-Kizigo-Muhesi Game Reserves. Aerial missions in the Game Reserves are the most expensive to operate, due to their remoteness, the logistics of fuel supply to bush airstips, and requiring our most experienced part-time microlight pilot, Ferdinand Koekemoer, to travel to Tanzania from South Africa, due to the challenging flying conditions in Rungwa (including strong, unpredictable winds and the layout of airstrips). Significant match funding to supplement IWT funds [redacted] is needed to achieve 120 hours per year for the Game Reserves. STEP applied to the US Government for match funding which was anticipated to begin in Q2 of Year 2. While our application passed technical review in June 2019, STEP has not received the funds to date, making it impossible to fund additional flight hours for the Game Reserves. We decided to focus our limited resources on aerial missions for the wet season, when illegal activities increase (Beale et al. 2018). While STEP has applied for match funding from a number of sources, we may continue to experience constraints on the availability of match funding for costs of aviation fuel and pilot time.
Assumption 2.1 Management authorities will continue with our agreement that they pay ranger allowances and STEP provides fuel for travel and vehicle support
Comment: This assumption remains valid and the terms for STEP’s fuel support to TAWA have been formalized in a written agreement.
Assumption 3.1 Rangers and protection managers will remain motivated to use this technology following comprehensive training, and with continued troubleshooting assistance from STEP.
Comment: This assumption remains valid.
Assumption 4.1: Following comprehensive beekeeping training and set-up of a monitoring system, farmers’ groups will conduct proper maintenance of beehive fences
Comment: This assumption is affected by the type and nature of leadership experienced in Rungwa. Accountability and group dynamics have proved challenging in the management of both beehive fences and VSLAs; without a strong leader, groups often fall behind on management, maintenance and some of the more difficult aspects of participation and follow up. After observing this, STEP has conducted refresher training and has increased supervision of beehive fences through the Community Liaison. By building a culture of accountability, follow up and directly connecting hive occupancy with careful management; the Community Liaison is helping to show the benefits of proper maintenance.
Comment 2: This assumption is also affected by the experience of the participants that make up two farmer groups in Rungwa. As colonization is influenced by flowering patterns, water, and cleanness of hives. Therefore, those with beekeeping experience are more likely to create conditions favourable to colonization than those without. This has been observed with our experience of the two farmer groups in Rungwa where Maendeleo has displayed better maintenance compared to Amani where all group members have no prior experience in beekeeping.

Assumption 4.2: Beehive fencing continues to deter elephants from farms, and crop loss mitigation and beekeeping training and benefits, and education are effective in fostering increased tolerance for elephants.

Comment 1: Due to low occupancy (see Figure 3) as result of frequent seasonal movement of bees in search of food and water, farmers groups have received only TZS [redacted] from the sale of 20 litres of honey. This represents a small contribution toward livelihood improvement, a component of increasing tolerance as part of the original theory of change. Farmers' groups expect to harvest from more than 10 hives that have been moved into trees between May and July 2020 but this is uncertain given heavy rainfall.

Comment 2: Due to low honey harvests, the main value of the beehive fences to farmers depends on their ability to deter elephants from farmland. For Itaga and Mkola sub-villages, the number of reported crop damage incidents for 2019 (50) was lower than prior to fence installation in 2017 (70 incidents). However, the number of crop damage incidents in Stesheni sub-village, where there is no beehive fence, may be increasing, although this may in part be due to increased survey effort in 2019. Our monitoring suggests that elephants do not cross the Mkola beehive fence upon encountering it, but either return to the Game Reserve or walk to the end of the fence into farmland. On other occasions of elephant crop damage, elephants enter farmland where no beehive fences have been placed along the Game Reserve boundary (e.g. in Stesheni sub-village). However, a challenge in Rungwa (when compared to other operating regions of STEP) is the spatial arrangement and size of individual farms; farms and households are scattered along the Game Reserve, buffer zones and corridors meaning the distances for potential elephant encounters are quite large, and beehive fences cannot block all elephant trails into farmland. STEP will continue to monitor elephant responses to the modified fence design.

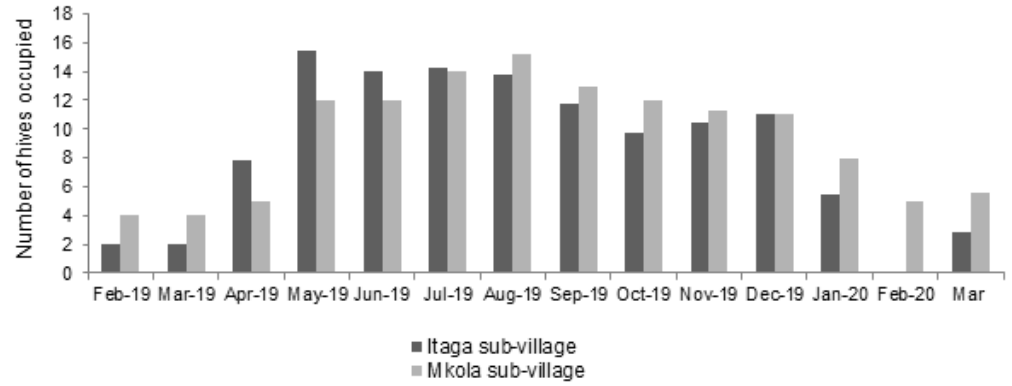

Figure 3. Beehive occupancy

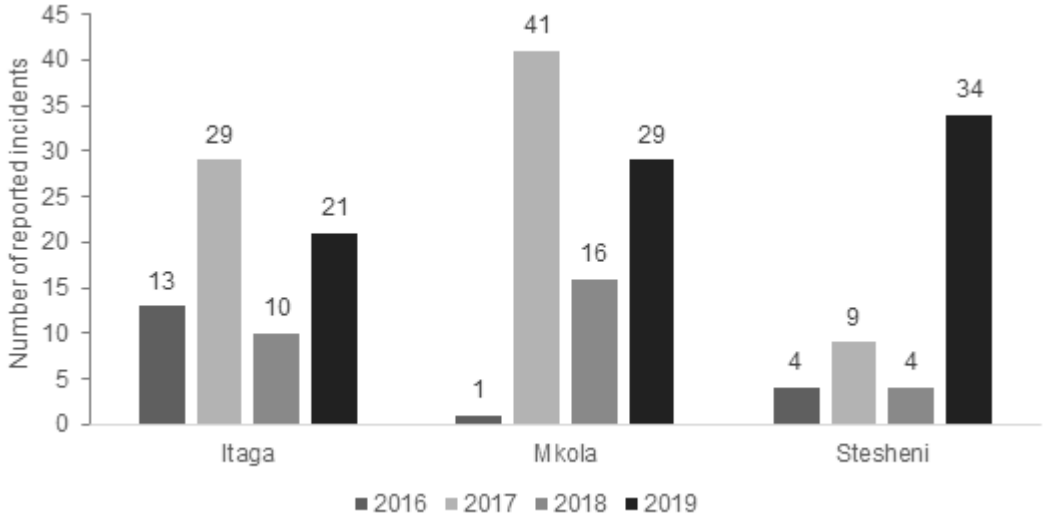

Figure 4: Number of reported incidents of crop damage by year and sub-village in Rungwa village, January 2017 to December 2019

Comment 3: Education materials and information shared at community awareness events have been specifically developed to transfer knowledge to a rural (largely non-literate) community. The assumption is that attendance and reading / looking at materials such as posters and leaflets, or watching videos, leads to increased knowledge on human-elephant conflict and mitigation strategies. The design process has

highlighted the need for varied media to be used in awareness raising events. Upon distribution of materials as part of the Tembo Cup, engagement, interest and basic comprehension were high. STEP will continue to distribute these materials and will develop methods for large scale assessment of comprehension, a key step before measuring knowledge retention and/or behaviour change. The assumption is still valid.
Assumption 5.1: The current tourist interest and market for elephant-friendly honey will continue to exist.
Comment: The tourist interest and market for elephant-friendly honey was overestimated at the time of this proposal, based on a small sample size that was not representative of wider trends. This, combined with the small harvest of Rungwa groups, challenges this assumption. As of current harvests, STEP plans to change its approach, utilizing existing markets and middlemen to facilitate consistent sales at a lower price, together with continued pursuit of the higher-end, tourist-focused market. This will be heavily influenced by the impact of COVID-19 on tourism activities.

3.5 Impact: achievement of positive impact on illegal wildlife trade and poverty alleviation

The impact stated in our original application was: A significant reduction in illegal killing of elephants and improved welfare and increased income for communities coexisting with elephants in our project area.
The contribution of the project to enhancing anti-poaching and protection of the Rungwa-Kizigo-Muhesi (RKM) Game Reserves is very likely to be resulting in decreased poaching of elephants and other wildlife species and products that may make their way into the illegal wildlife trade. [redacted] Additionally, no retaliatory killings of elephants was recorded during this period in our project villages.
At the local level, an estimated 1000 households will have their smallholder farms protected by beehive fences and thus incur fewer crop losses and achieve greater food security. We still plan to map the number of farms protected by beehive fences and we continue to monitor crop losses through data collection by local elephant monitors. As outlined in the review of Output 5, looking to beekeeping as the primary source of poverty alleviation through income generation is still uncertain and increasingly unlikely. Both reduced group sizes and smaller than expected honey yields due to a myriad of reasons (outlined extensively above) have limited the reach of benefits from beekeeping, expected to reach 120 households and generate income of close to £[redacted] per group. While we expect the new 'modern' beehives to increase honey production for both groups, the nature of Rungwa's ecology and the bee populations there make it unlikely that a steady income will be generated; this was always an aspect of the project meant to be tested and explored. Our trial with 'modern' beehives and individual beekeepers will provide further insight into the income generating potential of beekeeping.
As identified in the review of our first Annual Report, "the project's efforts to establish the VSLAs across a number of communities is perhaps the key mechanism by which poverty alleviation will be achieved." As outlined in 3.3, more than 50% of members in both groups have taken loans from their respective VSLAs and members have managed to repay over £[redacted] of credit during the 'low' agricultural season, indicating a potential diversification of income. Our 2018 Baseline Survey found that the primary source of income was maize farming. The maize season in and around Rungwa culminates in harvest between July-September. For many households, this means there is no disposable income until the sale of harvest. Therefore, for groups to show repayment on loans in any other month potentially indicates diversification of income. We will continue to monitor this, deepening our follow up on uses of loans and sources of income for repayment.
Our HEC awareness-raising program exceeded expectations by reaching over 10,000 people in its first year through events at schools, markets, and the football playoffs we referred to as The Tembo Cup. Participants at these awareness-raising events received educational materials that provide information about safety around elephants, methods to reduce conflict, and citizen's rights and responsibilities with regards to wildlife protections and environmental conservation. While we did not structure training with informational stalls, attendees were trained about crop-loss mitigation methods from STEP staff. We focused trainings on understanding why elephants move into farmland and how to stay safe around elephants, key concepts that we have found lacking in our field work. Without this foundation, mitigation methods are just short-term solutions. Together with a baseline understanding of elephant behaviour and how changes in land use lead to an increase in human-elephant conflict, mitigation methods, together with more long term actions such as land use planning, can actually create long term impacts on food security, attitudes and income. The expansion of the work of our Local Elephant Monitors to include one on one training about these foundational concepts reflects a shift in our understanding towards the importance of education and awareness raising to create long term change in coexistence.
The awareness days we conducted at primary and secondary schools were especially enlightening on the potential for behaviour change with students. These children will be the future farmers, herders and leaders of Tanzania. It is therefore critical that they value elephants, the ecosystems on which they depend and see how human land use has implications for human-elephant coexistence. By building a foundation of love, respect and understanding of elephants for primary school students, secondary school students can

begin to understand elephant behaviour in context and understand how human behaviour can challenge coexistence. The fundamental changes in land use planning are the ultimate investment in incomes and household resilience that these communities need. Mitigation techniques such as beehive fences and VSLAs can create incremental improvements but our focus for Year 3 of this project is to begin engaging meaningfully with local leaders to explore the potential for land use planning.

4. Project support to the IWT Challenge Fund Objectives and commitments under the London Declarations and Kasane Statement

This project continues to address two key themes identified in the London Conference Declaration, Kasane Statement, and the Hanoi Conference: 1) strengthening law enforcement, and 2) developing sustainable livelihoods and economic development.
As detailed in Section 3, this project supports Commitment #7 of the Kasane Statement by strengthening a national wildlife enforcement authority in one of the largest conservation complexes (>45,000 km^2) and hotspots of elephant poaching in Tanzania. This project continues to build institutional capacity at the site level through technical support, training, increasing patrol coverage, and increasing the effectiveness of law enforcement efforts. This project continues to complement past and current efforts of the Tanzanian Government and NGO actors to increase personnel, infrastructure, and equipment for law enforcement. Section 3.1 outlines current activities taken to date that address these issues.
As detailed in Section 3, this project continues to support Commitment #11 of the Kasane Statement through participatory, community-based initiatives that will help rural communities to address the challenges of coexisting with elephants. Specifically, the project continues to capacitate rural populations to implement methods to protect their livelihoods and improve their welfare and personal safety. While the project has encountered challenges here (as outlined in section 3), this is still on-going.
Finally, this project will support Commitment #12 of the Kasane Statement by involving local communities in developing and sharing knowledge and best practice in managing wildlife resources and taking actions to tackle illegal trade. In particular, we continue to facilitate information-sharing through the establishment of community elephant monitoring networks, through which people report elephant activity and conflict and poaching incidents. Furthermore, we have enabled community members trained by STEP in elephant deterrent methods and conflict mitigation strategies to share knowledge, skills, and experience with their peers through community awareness events. STEP undertook major actions during the reporting period by conducting the Community Leader Workshop and the activities associated with the Tembo Cup football tournament.

5. Impact on species in focus

This project aims to conserve a threatened population of savanna elephants that declined by over 50% in 10 years by poaching for the ivory trade. Multiple sources indicate that protection activities have increased security for elephants against poaching. In Year 2, STEP's aerial team detected no fresh or recent elephant carcasses. Furthermore, recent data from the 2018 aerial census of the Ruaha-Rungwa ecosystem (published by Tanzania Wildlife Research Institute, TAWIRI, in 2019) found a stable trend in the elephant population. The Ruaha-Rungwa population was estimated at 15,521 in 2018 compared to 15,836 in 2015. There was a decrease in the carcass ratio (the number of dead elephants divided by the sum of live + dead elephants) from 15% to 12% between 2015 and 2018. However, the carcass ratio remains higher than 8% (carcass ratios <8% are typical of stable or growing populations over the previous four year, Douglas-Hamilton & Burrill, 1991). These findings confirm that the serious decline in the elephant population was halted by 2018, but do not yet show recovery and growth of the population. This is to be expected, as our analysis of the demography of elephant populations in Tanzania (Jones et al, 2018: Age structure as an indicator of poaching pressure) demonstrated the need for effective long-term anti-poaching to allow elephant populations to recover from heavy poaching pressure, due to the long generation times and interbirth intervals of elephants.

The project also aims to conserve the Ruaha-Rungwa elephant population by mitigating human-elephant conflict and fostering more positive attitudes towards elephants through education, awareness-raising, and practical measures. In Year 3, we will repeat questionnaire surveys conducted in Year 1 to evaluate change in tolerance for and attitudes to elephants over the course of the project.

6. Project support to poverty alleviation

As noted in our Year 1 Annual Report, healthy elephant populations and ecosystems are recognized as significant for the Tanzanian national economy and society as a whole, not only because they are an

important national heritage but because tourism, the great majority of which is wildlife-based, contributes to a minimum 17% of GDP annually. At the local level, reductions in elephant poaching (and HEC) could increase tourism to the Rungwa-Kizigo-Muhesi Game Reserves, increasing revenue for the community outreach programs of the Reserves which are designed to fund local initiatives in health and education. Effective deterrence of and available income generating alternatives to poaching will likely lead longer term to increased harmony among communities along the boundaries and the wildlife authorities, with associated reductions in detention and arrests of community members.

As expanded upon extensively in section 3.5, an estimated 1000 households will have their farms directly protected by beehive fences and thus incur lower crop loss (and thereby achieve greater food security). STEP Local Elephant Monitors continue to monitor crop loss and food store damage. While a smaller than planned number of households are directly benefiting from income generated from beehive fences (and discrete beehives), income is nevertheless being generated. We expect a more diversified sales strategy (pursuing both high end and mid-level sales) could help with market access but the primary production challenge remains (as detailed above).

Again, as discussed extensively in section 3.5 and above in the activity review, more than 50% of members of both Village Savings and Loan Associations have taken loans. While the focus of Year 2 has been compliance and basic functioning of both VSLAs, part of the longer term remains to educate farmer groups on how to access these financial services, something we can track via financial records. There is also a need for more general financial training, focused on planning for repayment, considering investment and basic accounting. Success here will be impactful in the long term, potentially changing the financial outlook of participants beyond the project.

As discussed in 3.5, HEC Awareness-Raising activities exceeded expected attendance in Year 1. Attendees received training and educational materials that provided information about safety around elephants, methods to reduce conflict and citizen's rights and responsibilities with regards to wildlife protection and environmental conservation. See 3.5 for proposed long term impacts from this aspect of the project.

7. Consideration of gender equality issues

As of the current project period, STEP has made preliminary progress in support for gender equality. Current farmer groups are ~30% women and ~20% youth. All data can be disaggregated by gender and age (including baseline survey data). Expansion of STEP's work to Doroto, especially the establishment of new Village Savings and Loan Associations provides an opportunity to engage meaningfully with gender equality in selection, training and follow up. Prior to establishing farmers' groups in new project villages, we will conduct separate focus groups with women, men and youth in villages to understand their respective barriers to involvement in VSLA work and account for these in project implementation. As with other farmers' groups supported by STEP, we will endeavour for women to constitute a minimum of one-third of the membership and leadership roles. Youth (15-35 years in Tanzania's Youth Policy) will constitute a minimum of one quarter of group members. Our training for farmers' groups in VSLA management and leadership will include a gender equality component and emphasize the importance of female and youth participation in coexistence projects. As much as possible, female participants should inform STEP's strategy for engagement.

In our support to law enforcement, STEP continues to work with mixed gender teams of rangers. We will work with the Game Reserve Management to recruit female participants for all ranger training, and will collect gender disaggregated data on trainees through attendance sheets.

8. Monitoring and evaluation

To monitor project impact on law enforcement capacity, STEP continues to record flight hours and coverage, the number of ranger mobilizations in response to aerial surveillance, aerial reports and maps produced, and training and equipment provided. In general, our impact on strengthening the effectiveness of law enforcement is monitored by recording and analysing trends in arrests, illegal activities, and elephant poaching, and these indicators will be measured against available baselines from 2016-2017 to evaluate project impact. The greatest challenge we have is receiving data in a timely manner for the indicators pertaining to regular ranger patrols and arrests. Databases maintained by the GR are poorly organized, further complicating updates and monitoring.

As outlined in Year 1, we continue to evaluate the impact of beehive fences through the work of Local Elephant Monitors. They record crop losses using GPS units and standardized datasheets. LEMs record incidents of elephant damage to food stores, movements, and human and elephant injuries/deaths.

In a shift from our application, farmers' groups no longer record data on fence conditions and beehive occupancy; this information is currently recorded by the Community Liaison to improve consistency and quality. Together, the Community Liaison and farmers' groups monitor trends in occupancy and honey yields, pinpoint priorities for fence maintenance and identify successful strategies for increasing hive occupancy and safeguarding bee colonies. As outlined above, this information is entered weekly into the HEC Dashboard and reviewed by the STEP HEC Team to direct follow up and support in the field. We will take this same active approach with our beehive distribution trial; in addition to asking farmers to record

occupancy and abandonment, the Community Liaison will visit all trial participants bi-weekly to monitor hive activity.
To monitor the impact of VSLAs, the Community Liaison attends VSLA meetings weekly (up from the previous plan of once per month) in an effort to again increase consistency and accountability. All key performance indicators (shares purchased, attendance, repayment) are entered into the HEC Dashboard and used to monitor trends requiring follow up (delayed repayment or lower than average share purchase). We also continue to file copies of all financial records of VSLA accounts to help assess the number of shares purchased by members, the number of loans issued, interest earned, and the types of activities loans were requested for (disaggregated by age and gender). Accuracy in record keeping and accountability in meeting attendance, repayment, and other basic protocols are critical to establish a culture of transparency, trust and success. Without a functioning VSLA, farmers lack a critical opportunity for financial inclusion, mitigation for crop loss and a vital financial safety net. We need to increase our understanding of how group members are using loans and to perhaps deepen our understanding of the perceived value of VSLAs. The original theory of change posited that the value VSLA membership would be the interest earned on shares that is distributed at the share out. However, it may be that members' value the access to credit at credit-constrained periods of the year. We plan to conduct key informant interviews and focus groups to better understand how VSLAs contribute to increasing incomes, food security and tolerance.
For our education and awareness-raising work, M&E initially focused on tracking attendance. We also ran a small rapid knowledge retention survey to assess comprehension of key components of training. Overall, respondents averaged 79% retention of five key points (Appendix 16). For the next iteration of the Tembo Cup, we will continue to explore methods for rapid knowledge retention assessment. We will also plan to measure longer term retention of knowledge among attendees. To look at longer term impacts on tolerance for elephants, the ultimate outcome of this project, STEP plans to conduct post-project surveys in Year 3. We will look at the impact of mitigation strategies on incomes, food security and attitudes towards elephants. We will expand this to look also at the impact of education and awareness activities as well as, critically, 1:1 training facilitated by Local Elephant Monitors plus.

9. Lessons learnt

From the point of view of protection and anti-poaching, we learned several lessons during Year 2. On the positive side, the aerial surveillance activity continued to prove its value, having rapid impact on illegal activity, together with the ground teams with which it is coordinated, whenever it flies a mission. The STEP Zenith Skyjeep light aircraft flies slow and low and is well suited to navigating this difficult terrain and detecting illegal activity amidst the miombo woodland, compared to larger Cessna aircraft which are typically used for conservation flying. Aerial surveillance for the Game Reserves is remote and dangerous work that requires a highly skilled and experienced pilot, hence our use at all times at this site of our best bush pilot, Ferdinand Koekemoer, who has become very familiar with the area, and familiar to the rangers and Rapid Response Unit with whom he works well. Unfortunately, in early 2020, Ferdi had to take a full-time flying job near his base in South Africa, which presents us with a challenge going forward. The most experienced microlight pilots are based in South Africa, and it is likely that we will recruit a replacement pilot from a network of conservation pilots in South Africa. The ideal scenario and our long-term goal would be to employ Ferdinand Koekemoer or a pilot of his calibre full-time, however that remains beyond our budget. We again encountered the challenge in the wet season of rangers being unable to reach some of the sites of illegal activity spotted from the air in a timely manner to be effective, due to the poor state of the mud roads in the Reserves. We have again recommended to RKM management the use of quality off-road motorbikes for this season.
STEP has learned valuable lessons from the human-elephant coexistence component of this project, many of which are detailed elsewhere in this report. In brief, due to the limited efficacy of beehive fences in the Rungwa landscape, STEP has revised its approach to include a larger focus on increasing knowledge and skills about HEC through education and awareness-raising to increase farmer agency and knowledge in managing HEC, relationship-building between communities and the Game Reserves through community events, and exploring VSLAs for. Furthermore, in Year 3 and beyond, STEP intends to investigate drivers of land use and farming decisions and to use this understanding and data from local elephant monitors to assist village leaders in land use planning and zoning to minimize the expansion of farmland (the result of rapid in-migration into this area) in high risk areas for elephant crop damage. STEP has shared these lessons with the Tanzanian government and other stakeholders through its contribution to the first National Strategy on Human-Wildlife Conflict.

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

Feedback: In the next Annual Report, the project should discuss the potential risks of an increase in HEC with a recovering elephant population.
Comment: There is no clear relationship between elephant population size and levels of crop damage or human-elephant conflict (Hoare 2000), rather, levels of crop damage tend to be affected by spatial factors,

including the presence of elephant corridors and seasonal dispersal areas, the layout of farms, and presence of water. Between 2015 and 2018, there was no increase in the Ruaha-Rungwa elephant population, and STEP's monitoring has not found evidence of an increase in crop damage incidents. STEP will continue to monitor human-elephant interactions on village land, and repeat questions to assess the frequency of crop damage in the Year 3 questionnaire survey to determine how levels of crop damage may have changed and to help plan future work.
Feedback: Due recognition of the IWT Challenge Fund and UK Government support to be given in appropriate material/websites.
Comment: STEP added the IWT Challenge Fund, DEFRA and UKAid logos to its website, to publications resulting from this project, and the logo is included in STEP's upcoming 2019 Annual Report.
Feedback: Contingency planning for non-flying days/permit renewal delays
Comment: STEP begins processes of permit renewal well in advance, and has learned that in-person follow-up at TCAA offices in Dar es Salaam can speed up this process.
Feedback: Outline how on-going visits by liaison personnel will involve on-going capacity building support for beekeeping training recipients. Update on CBO Management and Financial Skills training
Comment: With each weekly visit, the Community Liaison and Local Elephant Monitors reinforce good beekeeping practices: detail-oriented and thorough cleaning of hives, evaluating any entry-points for insects and provide refresher training on relevant actions such as harvest or removing damaged combs. This is ad hoc and situational but our M&E helps us to advise on topical training content. Due to challenges with basic compliance (record keeping, attendance, governance), more advanced training has been delayed. It is planned for a key component of Year 3.
Sustainability and Legacy Feedback: There are concerns on the sustainability of this arrangement post project, as there is no information provided on how this will be funded after the project's lifetime or what impact this may have on future law enforcement patrols.
Comment: We have responded to this Feedback in Section 12.
Feedback: In this section of the report there is reference to interviews with secondary school teachers regarding topics for future curriculum topics. The progress that the project is currently making regarding the improvement of literacy has not been mentioned elsewhere in the report - this could significantly contribute to the project legacy and the addition of activities related to literacy should be pursued if at all possible.
Comment: We strongly feel that, while challenging to educational awareness activities, literacy is outside of our mandate as an elephant conservation organization. We have, however, through our education and awareness work (and together with our work in the Kilombero Valley), begun to develop a broader curriculum related to human-elephant coexistence. This is proposed as a national curriculum in the first National Human-Wildlife Conflict Strategy for Tanzania, currently under development for the Tanzanian Government and led by STEP's CEO Trevor Jones. Education has become a critical aspect of this project's legacy.

11. Other comments on progress not covered elsewhere

In Year 2, our activities were affected by exceptional rainfall between November 2019 and March 2020 (in some areas, rainfall was almost twice the annual average) due to the Indian Ocean Dipole. This affected accessibility of remote areas, farmer's priorities, and the ability to hold meetings to initiate new project activities (meetings are always done outside and are poorly attended during heavy rain).

12. Sustainability and legacy

Section 13 details efforts made to promote the project's work in Year Two. Continued interest in the project is evidenced by 1) TAWA's excellent participation and collaboration on human-elephant coexistence activities, including in a workshop for village leaders, the Tembo Cup football league and a range of community awareness events, and 2) STEP's CEO being requested by the Tanzanian Government to lead the development of the first National Strategy on Human-Wildlife Conflict, which will be launched in mid-2020.
Swahili-language educational materials about human-elephant coexistence developed by STEP have been shared with TAWA and other stakeholders and distributed widely in the project area. STEP's education and awareness work served as the basis for developing a broader curriculum related to human-elephant coexistence included in the first Human-Wildlife Conflict Strategy for Tanzania. Therefore, education has become a critical aspect of this project's legacy. The project has produced two technical reports, including (1) analysis of aerial patrols and (2) results of the baseline household survey and ground surveys, which were shared with project partners, in addition to annual and quarterly progress reports. Analysis of human-elephant interaction monitoring data continues to be shared with project partners and Tanzania Wildlife Research Institute. Protection activities require long-term funding, including support from civil society to address shortfalls in budgets of Tanzania's wildlife agencies. Furthermore, current funding models based on wildlife tourism do not raise sufficient funds for all of Tanzania's protected areas, highlighting the need to diversify conservation funding. STEP has annual meetings with RKM Management to determine the greatest needs and how to utilize limited resources in the most effective manner (for

example, by prioritising wet season aerial missions in Year 2 of the project). [redacted] With the downturn in tourism in 2020 due to the COVID-19 pandemic, RKM GRs and TAWA as a whole are expecting a significant budget reduction for 2020/2021. This situation presents a serious challenge to the security of the RKM GRs and the legacy of increased protection for elephants built over the last two years. To support TAWA, STEP has continued its fundraising efforts, including through two grant applications to the US Government for ground patrol and aerial surveillance funding (one application passed technical review, one application is still under review). In Year 3, STEP aims to diversify its funding base for protection activities by approaching foundations and increased use of crowd-funding. In addition, through a research collaboration with the University of Bangor, we are learning more about the drivers of (illegal) natural resource use in the ecosystem. This important project will help to design future work that, in the long-term, we hope will reduce the amount of funding needed for protection.

Other aspects of our exit strategy remain similar, with an emphasis on strong involvement of project partners and local communities in project implementation and monitoring, capacity building of project partners, and technical outputs to record lessons learned.

However, changes to the project and the timing of beehive distribution may mean that the conditions for beehive handover (as specified in MOUs) are not met during the project period. STEP is committed to and will honour these agreements beyond the lifetime of this grant if this were to occur, to ensure that handover is completed in a just and sustainable manner. STEP also intends for the 'modern' beehive distribution trial to ultimately stimulate demand for improved hives in the area. If beekeeping is an economically viable opportunity and with market facilitation support (the Tanzania Forestry Service has recently built a high-quality processing centre near the Itigi District Office), beekeepers can steadily increase their revenue through the use of improved hives. We hope this exposure, together with support from our partners, will support these activities to continue over the longer term.

13. IWT Challenge Fund identity

The IWT Challenge Fund and UK Government funding were recognized in STEP's progress and technical reports to project partners, national partners (TAWA, District and Regional Governments, Tanzania Wildlife Research Institute (TAWIRI)) and donors, as well as on STEP's website and in STEP's upcoming Annual Report for 2019. STEP's grant from the IWT Challenge Fund was communicated as being part of a larger program in Ruaha-Rungwa, as STEP receives financial support from other funders towards protection and human-elephant coexistence in Rungwa-Kizigo-Muhesi. In Year 2, STEP hosted a visit by the British High Commissioner for Tanzania and shared a presentation on the work being done under the IWT Challenge Fund project. STEP has social media accounts on Facebook (16,689 followers), Instagram (678 followers) and Twitter (1,530 followers). We tagged DEFRA and the IWT Challenge Fund in three social media posts on Facebook and five posts on Instagram.

14. Safeguarding

STEP revises its Human Resources Manual minimum once per year, and informs all staff of changes to the Manual in writing. The HR Manual includes policies on code of conduct for staff, while interns, volunteers and local monitors sign agreements which detail the code of conduct. The HR Manual includes a policy on sexual harassment and abuse, including details on how to report an allegation, how allegations will be managed, and what sanctions and disciplinary measures may be applied. The HR Manual also includes a protocol for medical emergencies, a. STEP is a member of the Association of Tanzania Employers, which shares regular guidance on legal requirements for employers in Tanzania. No safeguarding issues were raised in Year 1 of the project. STEP has noted the need for policies on bullying, whistle-blowing, and the need to ensure safeguarding policies by downstream partners. Early in Year 2, STEP will engage in an institutional strengthening exercise (supported by matched funding), which will include a review of existing policies and development of policies required by DEFRA with support from a legal consultant. No safeguarding issues were raised in Year 2 of the project.

15. Project expenditure

Table 1: Project expenditure <u>during the reporting period</u> (April 2019-March 2020)

Project spend (indicative) sinc last annual report	**2019/20 Grant (£)**	**2019/20 Total actual IWT Costs (£)**	**Variance %**	**Comments (please explain significant variances)**
Staff costs (see below)	[redacted]	[redacted]	[redacted]	
Consultancy costs	[redacted]	[redacted]	[redacted]	

Overhead Costs	[redacted]	[redacted]	[redacted]	
Travel and subsistence	[redacted]	[redacted]	[redacted]	
Operating Costs	[redacted]	[redacted]	[redacted]	
Operating Costs (Partner)	[redacted]	[redacted]	[redacted]	
Capital items (see below)				
Others (see below)	[redacted]	[redacted]	[redacted]	
TOTAL	[redacted]	[redacted]	[redacted]	

16. 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 IWT Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here):

In July 2019, STEP conducted Tembo Week, a week of awareness raising events focused on the drivers and impacts of human-elephant interactions. The culmination of the week was the Tembo Cup, a football tournament involving 12 teams from 5 villages. Over 5000 spectators attended these matches. 13 trainings were conducted that used basic elements of elephant biology and ecology to explain causes of human-elephant conflict. Best practices for keeping safe around elephants were also offered. Trainings were based on content in STEP's HEC Booklet titled Tembo Na Watu: Njia za Kuishi Pamoja, copies of which were also disseminated. Results from a simple knowledge retention survey showed participants retained an average of 79% of five key concepts covered during trainings. More than 1400 people attended seven cinema nights in six different locations at which two documentaries about elephants in Swahili and Swahili music videos about human-wildlife conflict were shown. More than 1500 primary and secondary school students received education about elephant behaviour and ecology at nine trainings at nine schools. 395 educational booklets and 495 fliers were distributed throughout Tembo Week to village offices, schools, government partners and spectators. Rungwa Game Reserve Leadership supported and helped to facilitate Tembo Week activities.

For photos, please see Appendix 1.

References:

Hariohay,Kwaslema, Ranke, Peter S., Fyumagwa, Robert D., Kideghesho, Jafari, R, Røskaft, Eivin. Drivers of conservation crimes in Rungwa-Kizigo-Muhesi Game Reserves, Central Tanzania. 2019. Global Ecology and Conservation (17) e00522

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2019-2020

Project summary	Measurable Indicators	Progress and Achievements April 2019 - March 2020	Actions required/planned for next period
Impact Significant reduction in illegal killing of elephants and improved welfare and increased income for communities coexisting with elephants in our project area.		Steps made towards reduction in illegal killing of elephants, improved community welfare though reduction in elephant visits to farmland, and access to financial services through VSLAs.	[redacted]
Outcome Enhanced law enforcement capacity in Rungwa-Kizigo-Muhesi will increase detection and arrest of poachers and reduce elephant poaching. Community beehive-fence projects will increase incomes, food security, and tolerance for elephants.	0.1 The number of illegal activities detected via aerial and ground patrols doubles by project end (relative to 2017 baseline). 0.2 Number of ranger mobilizations based on aerial intelligence increases by 100% (relative to 2017 baseline). 0.3 [redacted] 0.4 Poaching declines measured in a 50% reduction in the number of illegally killed elephant carcasses detected on aerial and foot patrols 0.5 33% of households in project area report improved food security as a result of crop protection from beehive fences 0.6 20% increase in household income levels from beekeeping among project beneficiaries 0.7 50% increase in the number of farmers and village leaders showing tolerance of elephants. 0.8 Zero human deaths resulting from elephants due to increased safety awareness and availability of elephant deterrents	0.1 36 illegal activities detected (1.24 per flight hour 0.2 10 ranger mobilizations based on aerial intelligence (18 in 2018) 0. [redacted] 05. Baseline established. Indicator to be re-measured in Y3. 0.6 Y1 status = 0 0.7 Baseline established. Outcome to be re-measured in Y3. 0.8 Y1 status = 2 in immediate project area, 3 in wider area 0.9 Y1 status = 0 in immediate project area, 1 in wider area.	• Continue fuel support to TAWA to enable ground patrols • Increase hours of aerial patrols • Conduct awareness and educational activities to increase knowledge about mitigation methods, safety around elephants, and elephant conservation • Increase hive occupancy, hive health and honey harvests for beehive fences through close monitoring • Implement beehive fencing and VSLA with new farmers group

	0.9 Zero elephant mortality from retaliatory killing or Problem Animal Control		
Output 1. Minimum of 4,000 km^2 of Rungwa-Kizigo-Muhesi GRs under regular aerial surveillance, including coordinated ground-air response patrols and analyses of poaching hotspots and trends from aerial data shared with protection departments.	1.1 Hours and spatial coverage of aerial surveillance (target: 175 hours per year, 4,000 km^2) 1.2 Number of coordinated ground-air patrols per quarter (target: 15) 1.3 [redacted] 1.4 Number of protection department maps generated with aerial data (target: one per month)	1.1 29 hours flown over 10-month period, compared with 42.42 hours in 2018; constraint on flying more hours due to budget availability ,however, meeting the annual target in next period will be dependent on extent of match funding obtained. 11648.km^2 covered 1.2 Approximately 10 responsive ground operations completed over three quarters [redacted] 1.4 2 protection department maps generated with aerial data	
Activity 1.1 Aerial surveillance missions coordinated with rapid ground response by rangers		Several successful surveillance missions completed with overall good cooperation and rapid response by rangers	More surveillance missions with rapid response to illegal activity at all times
Activity 1.2 Rapid mapping and reporting of aerial missions and rapid response operations		Mapping and reporting of aerial missions and rapid response operations completed by STEP GIS Department in all cases	Continuation to current high standard
Activity 1.3 Regular spatio-temporal analysis of mission outcomes and anti-poaching strategy shared and discussed with Game Reserve Managers		Plans for second Extensive review and analysis of all aerial surveillance data in RKM from 2019-20121 are in place	Continuing analysis, and seeking more regular strategy meetings with Managers
Output 2. 20 regular ranger patrol days per month throughout remote and key elephant areas of Rungwa-Kizigo-Muhesi GRs, with patrol data entered and analysed in SMART by Game Reserve Staff each month.	2.1 Person-days of patrols per month (target: 2 teams of 6 rangers each x 10 days = 120 person-days) 2.2 Patrol maps and reports submitted per month (target: 2) 2.3 [redacted]	2.1 3 teams of 9 rangers each X 15 days = 405 person days 1 team of 9 rangers X 30 days = 270 person-days 2.2 Geo-referenced patrol data submitted monthly for SMART 2.3 [redacted]	
Activity 2.1 Ranger patrols throughout remote and key elephant areas		Regular patrols carried out each month	On-going
Activity 2.2. Patrol maps and reports submitted by rangers to Game Reserve Managers		Completed each month	On-going

Activity 2.3 Ongoing feedback and technical support to rangers from STEP GIS Department	STEP GIS Department provided feedback on map shared, as well as continuing GPS training for ranger aerial observers	On-going
Output 3.80 protection managers and rangers provided with and trained in use of GPS, GIS, and ground-to-air communications, resulting in intelligence-led patrol planning (40 already trained 2016-17)	1 Number of GPS units, GIS software packages and ground-to-air radios provided (targets: 10, 4 and 4) 3.2 Number of ranger patrols tracked using GPS units (target: 100% by year 1) 3.3 Number of monthly patrol maps produced by protection departments (target: one per month)	3.1 No additional GPS units were provided in this period as a needs assessment indicated that previously supplied units were currently adequate; one additional sat phone provided 3.2 To our knowledge, 100% of ranger patrols are track logged 3.3 RKM Game Reserves have opted to move to SMART software for law enforcement monitoring from which monthly patrol maps are generated (making this indicator less appropriate). Two independent patrol maps were produced by the protection department to document patrols carried out using fuel provisioned by STEP
Activity 3.1 Training of protection managers and rangers in GPS for patrols and GIS for mapping	5 additional rangers trained in this period (total 45), technical support on GIS for mapping was ongoing for one Manager	Needs assessment to guide additional training
Activity 3.2 Training of protection managers and rangers in ground-to-air communications	Ground-to-air communications training was provided for four ranger aerial observers at Rungwa GR HQ in May 2018, and continued via practical experience throughout aerial missions (involving additional four rangers)	On-going refresher training and practical experience
Activity 3.3 Intelligence-led patrol planning based on aerial and ground patrol maps implemented	Several ground patrols and rapid responses implemented based on rapid reports and maps from aerial surveillance	To be on-going
Activity 3.4 GPS units, GIS software packages and ground-to-air radios phones provided to protection managers and rangers	No additional GPS units were provided in this period as a needs assessment indicated that previously supplied units were currently adequate; one additional sat phone provided	Needs assessment will be on-going
Output 4 1km-long beehive fences established and managed by registered Community-Based Organizations (CBOs) in two villages and community elephant monitoring network established in four villages.	4.1 Number of CBOs self-organised and registered (target two) 4.2 Number of registered members of CBOs (target: 30 members each, 33% women). 4.3 Number of local elephant monitors showing full knowledge of data	4.1: 2 registered in 2017 4.2: Total 37: 21 with Maendeleo farmer group and 16 Amani Beekeeping group 4.3: 3 out of 3 show full knowledge of data collection. 3 More to be hired in Year 3 4.4: 3 (75%) operate at Mkola, Stesheni and Itaga sub villages in Rungwa village project area

	collection and camera-trapping protocols (target: six) 4.4 Number of community elephant monitoring networks established in project villages (target: four) 4.5 Number of community members attending annual awareness events (target: 4800) 4.6 Number and length of beehive fences constructed (target: 4 fences of 1 km each) 4.7 Number of occupied beehives (target: 40% by project end) 4.8 Number of elephant visits to farms (target: 70% reduction by project end)	4.5: 10,000+ community members attended the Tembo Cup, school trainings and evening films 4.6: 2 beehive fences modified into dummy hives fences and supported; Mkola dummy hives fence (1.12km) under Maendeleo Farmer Group & Itaga bee dummy hives fence (1.08km) managed by Amani Beekeeping Group 4.7: 23 (5.7%) occupancy, off track by 34.3%, all hives were moved into new location, monitoring is effectively conducted to learn new trends 4.8: 3 monitors are actively frequently collecting data recorded 84 elephant crop damage incidents in 2019, 30% decline in elephant incidents relative to 2017 for 2 sub-villages with long-term data. With food stores damages, monitors recorded 5 food stores damage incidents in 2019, compared to 12 incidents in 2018 (>50% decrease)
Activity 4.1: Support farmers' groups to register CBOs	Completed for current sites, still pending for new sites.	Viability study for VSLA support conducted in Doroto
Activity 4.2 Train farmer's groups in CBO management and financial skills	Completed for current sites, still pending for new sites.	Viability study for VSLA support conducted in Doroto
Activity 4.4 Train farmer's groups in fence maintenance and monitoring	On-going in current sites, planned for new fence launches.	16 Amani members and 21 Maendeleo group members trained on construction of dummy hives to replace the two former beehives fence in Mkola and Itaga site
Activity 4.5 Conduct regular monitoring and support visits to beehive fences and farmer's groups	On-going in current sites, planned for new fence launches.	On-going activities, conducted every week
Activity 4.6 Train local elephant monitors in data collection, GPS, and camera-trapping	6 individuals trained, 3 are currently working, 3 cancelled due to underperformance throughout the period between September 2018-present	3 monitors were upgraded into elephant monitor plus and trained on 1:1 farmer training on HEI for enhancing coexistence in their location (Mkola, Stesheni and Itaga sub-villages)
Activity 4.7 Local elephant monitors collect elephant activity data	3 elephant monitors are actively collecting data as of March 2019	3 elephant are collecting data since may 2019 and started 1:1 training role since February 2020

Activity 4.8 Train locally-based Community Liaison in HEC mitigation strategies to provide support to farmer's groups	Recruited and trained on beehives fence monitoring, VSLA management, collection of elephant data, mitigation strategies and 1:1 training to farmers	Will continue to train Liaison on mitigation strategies and will involve heavily in community-awareness raising events.
Activity 4.9 Raise awareness about HEC mitigation strategies at Tembo Cup football league matches	On track, awareness event reached 8 villages	Engaged members of community on tembo cup tournament, evening films and school training
Activity 4.10 Raise awareness and disseminate education materials at schools, markets, and offices	On track, final design printed and distributed through community events	Engaged members of community on tembo cup tournament, evening films and school training
Output 5: Development of income-generating opportunities via beekeeping and access to financial services through Village Savings and Loans Associations.	5.1 Number of CBO members who demonstrate full working knowledge of beekeeping (target: 90, 33% women) 5.2 Number of Village Savings and Loans Associations (VSLAs) registered (target: four) 5.3 Number of people with access to loans from VSLAs (minimum target: 120) 5.4 Growth in capital and loan issuing and repayment rate of VSLAs 5.5 Honey yield and sales income generated from beehive fences	5.1: Currently 37 (16 members of Amani Beekeeping Group and 21 from Maendeleo (45% women) 5.2: 2 registered CBOs operating VSLA schemes. 5.3: Currently 37 (16 members of Amani Beekeeping Group and 21 members of Maendeleo Farmer Group) 5.4: Mandeleo Farmers' Group raised TZS 1,776,000 in share purchases in its 4 month of share sales in started in December 2019 (on-going cycle), issued 13 loan valued 2,263,500. Amani Beekeeping Group raised TZS 1,222,00 in share purchases, issued 14 loans valued 2,227,500. Loan repayment stand at TZS 2,040,000. Comprehensive analysis will be shared after share-out meeting for each group 5.5: Off track, with 5.7% level of occupancy, Amani harvested 20 litres and sold at TZS 150,000, more data to be shared at the end of 2020
Activity 5.1 Train farmer's groups in VSLA development and operations	Complete for existing villages	Planned for Doroto village (3 sub-villages) where viability study was done in December 2019. Will be done between june and September 2020
Activity 5.2 Support farmer's cooperatives to register VSLAs	Complete for existing villages/farmers' groups	Same as in 5.1
Activity 5.3 Conduct regular monitoring and support visits to VSLAs	Each VSLA visited for monitoring once a week by Community Liaison to both active groups.	Continue to monitor existing farmers' groups and extend monitoring to Doroto Village in 2020 when field operation resume

Activity 5.4 Train farmers' groups in beekeeping	Initial training complete for existing farmers' groups in end 2018 and early 2019.	On-going focus is to train 40 traditional beekeepers engaged in trial learning on values added by distributed Kenyan top bars over the local hives
Activity 5.5 Conduct bi-annual monitoring and refresher training for farmers' groups with professional beekeeper	1 training conducted by TFS in collaboration with Itigi DC to Maendeleo Farmer Group	Similar training to be conducted for Amani Beekeeping Group

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

N.B. if your application's logframe is presented in a different format in your application, please transpose into the below template. Please feel free to contact IWT-Fund@ltsi.co.uk if you have any questions regarding this.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: Significant reduction in illegal killing of elephants and improved welfare and increased income for communities coexisting with elephants in our project area.			
Outcome: Enhanced law enforcement capacity in Rungwa-Kizigo-Muhesi will increase detection and arrest of poachers and reduce elephant poaching. Community beehive-fence projects will increase incomes, food security, and tolerance for elephants.	0.1 The number of illegal activities detected via aerial and ground patrols doubles by project end (relative to 2017 baseline). 0.2 Number of ranger mobilizations based on aerial intelligence increases by 100% (relative to 2017 baseline). 0.3 The number of poacher arrests made per year in each Game Reserve doubles by project end (relative to 2017 baseline). 0.4 Poaching declines measured in a 50% reduction in the number of illegally killed elephant carcasses detected on aerial and foot patrols 0.5 33% of households in project area report improved food security as a result of crop protection from beehive fences	0.1 Aerial patrol and ground patrol data collection sheets 0.2 Protection department records and interviews with protection staff 0.3 Protection department records 0.4 Aerial and ground patrol data collection sheets 0.5 Project household baseline and focus group discussions; final project evaluation survey 0.6 Project household baseline and focus group discussions; final project evaluation survey 0.7 Pre and post project surveys of tolerance	0.1 STEP will be able to maintain its established and trusted relationships with Game Reserves senior management. 0.2 A dedicated team of protection managers and rangers will remain motivated to utilize and manage remote surveillance technology. 0.3 Beehive fencing continues to deter elephants from farms, and crop loss mitigation and beekeeping training and benefits, and education are effective in fostering increased tolerance for elephants.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	0.6 20% increase in household income levels from beekeeping among project beneficiaries 0.7 50% increase in the number of farmers and village leaders showing tolerance of elephants. 0.8 Zero human deaths resulting from elephants due to increased safety awareness and availability of elephant deterrents 0.9 Zero elephant mortality from retaliatory killings or Problem Animal Control	0.8 Project monitoring, District Government and GR records (against existing baseline data from 2017). 0.9 Project monitoring, District Government and GR records (against existing baseline data from 2017).	
Output 1. Minimum of 4,000 km^2 of Rungwa-Kizigo-Muhesi GRs under regular aerial surveillance, including coordinated ground-air response patrols and analyses of trends from aerial data shared with protection departments.	1.1 Hours and spatial coverage of aerial surveillance (target: 120 hours per year, 4,000 km^2) 1.2 Number of coordinated ground-air patrols per quarter (target:10) 1.3 Number of illegal activities detected on aerial patrols 1.4 Number of protection department maps generated with aerial data (target: one per month)	1.1 Flight logs 1.2 Protection department records; flight logs 1.3 Aerial patrol data collection sheets 1.4 Protection and mapping department records	1.1 The plane will operate at full capacity throughout the project with only minor maintenance requirements of maximum three months down-time per year. We assume that the plane will be able to make up to 25 hours of flights per month.
Output 2. 20 regular ranger patrol days per month throughout remote and key elephant areas of Rungwa-Kizigo-Muhesi GRs, with all patrol data entered and analysed in SMART by Game Reserve staff each month.	2.1 Person-days of patrols per month (target: 2 teams of 6 rangers each x 10 days = 120 person-days) 2.2 Number of illegal activities detected and poachers arrested on regular patrols	2.1 Protection and mapping department records 2.2 Monthly outcomes maps and reports 2.3 Monthly outcomes maps and reports	2.1 Management authorities will continue with our agreement that they pay ranger allowances and STEP provides fuel for travel and vehicle support

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Output 3. 80 protection managers and rangers provided with and trained in use of GPS, GIS, and ground-to-air communications, resulting in intelligence-led patrol planning (40 already trained 2016-17)	3.1 Number of GPS units, GIS software packages and ground-to-air radios provided (targets: 10, 4 and 4) 3.2 Number of ranger patrols tracked using GPS units (target: 100% by year 1)	3.1 Equipment donation agreements/certificates 3.2 Protection department records; GPs data 3.3 Protection and mapping department records	3.1 Rangers and protection managers will remain motivated to use this technology following comprehensive training, and with continued troubleshooting assistance from STEP
4. 1km-long beehive fences established and managed by registered Community-Based Organizations (CBOs) in two villages and community elephant monitoring network established in four villages.	4.1 Number of CBOs self-organised and registered (target two) 4.2 Number of registered members of CBOs (target: 30 members each, 33% women). 4.3 Number of local elephant monitors showing full knowledge of data collection (target: six) 4.4 Number of community elephant monitoring networks established in project villages (target: four) 4.5 Number of community members attending annual awareness events (target: 4800) 4.6 Number and length of beehive fences constructed (target: 2 fences of 1 km each) 4.7 Number of occupied beehives (target: 40% by project end) 4.8 Number of elephant visits to farms (target: 70% reduction by project end) 4.9 Number of individuals engaged in beekeeping as an income-generating activity	4.1 District Government registration certificates 4.2 District Government registration certificates 4.3 Pre and post training surveys 4.4 Elephant reporting/monitoring network data 4.5 Attendance sheets 4.6 Beehive fence survey and mapping 4.7 Beehive occupancy monitoring by local monitors, verified by STEP 4.8 Baseline survey, continuous monitoring of elephant visits by local elephant monitors 4.9 Signed agreements between STEP and individual farmers	4.1 Following comprehensive beekeeping training and set-up of a monitoring system, farmers' groups will conduct proper maintenance of beehive fences 4.2 Beehive fencing will continue to deter elephants from farms (no habituation by elephants to beehive fences)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
5. Development of income-generating opportunities via beekeeping and access to financial services through Village Savings and Loans Associations.	5.1 Number of CBO members who demonstrate full working knowledge of beekeeping (target: 90, 33% women) 5.2 Number of Village Savings and Loans Associations (VSLAs) registered (target: four) 5.3 Number of people with access to loans from VSLAs (minimum target: 120) 5.4 Growth in capital and loan issuing and repayment rate of VSLAs 5.5 Honey yield and sales income generated from beehive fences and beekeeping operations	5.1 Post training surveys and feedback 5.2 Registration certificates 5.3 Financial record-keeping by VSLAs 5.4 Financial record-keeping by VSLAs 5.5 Financial record-keeping by CBOs	5.1 The current tourist interest and market for elephant-friendly honey will continue to exist.

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 Aerial surveillance missions coordinated with rapid ground response by rangers

Activity 1.2 Rapid mapping and reporting of aerial missions and rapid response operations

Activity 1.3 Regular spatio-temporal analysis of mission outcomes and anti-poaching strategy shared and discussed with Game Reserve Managers

Activity 2.1 Ranger patrols throughout remote and key elephant areas

Activity 2.2. Patrol maps and reports submitted by rangers to Game Reserve Managers

Activity 2.3 On-going feedback and technical support to rangers from STEP GIS Department

Activity 3.1 Training of protection managers and rangers in GPS for patrols and GIS for mapping

Activity 3.2 Training of protection managers and rangers in ground-to-air communications

Activity 3.3 Intelligence-led patrol planning based on aerial and ground patrol maps implemented

Activity 3.4 GPS units, GIS software packages and ground-to-air radios phones provided to protection managers and rangers

Activity 4.1: Support farmers' groups to register CBOs

Activity 4.2 Train farmer's groups in CBO management and financial skills

Activity 4.3 Construct beehive fences with farmer's groups in two new villages

Activity 4.4 Train farmer's groups in fence maintenance and monitoring

Activity 4.5 Conduct regular monitoring and support visits to beehive fences and farmer's groups

Activity 4.6 Train local elephant monitors in data collection, GPS, and camera-trapping

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Activity 4.7 Local elephant monitors collect elephant activity data Activity 4.8 Train locally-based Community Liaison in HEC mitigation strategies to provide support to farmer's groups Activity 4.9 Raise awareness about HEC mitigation strategies at Tembo Cup football league matches Activity 4.10 Raise awareness and disseminate education materials at schools, markets, and offices Activity 5.1 Train farmer's groups in VSLA development and operations Activity 5.2 Support farmer's cooperatives to register VSLAs Activity 5.3 Conduct regular monitoring and support visits to VSLAs Activity 5.4 Train farmers' groups in beekeeping Activity 5.5 Conduct bi-annual monitoring and refresher training for farmers' groups with professional beekeeper			

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to IWT-Fund@ltsi.co.uk putting the project number in the subject line.	Yes
Is your report more than 10MB? If so, please discuss with IWT-Fund@ltsi.co.uk about the best way to deliver the report, putting the project number in the subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
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. However, we would expect that most material will now be electronic.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	