

Charity number: 1179460



Southern Tanzania Elephant Trust
Annual Report and Accounts for the Year ended
31st December 2021

Charity Name: Southern Tanzania Elephant Trust

Registered Charity Number: 1179460

Principal Address:

30 Barn Road
Stirling
FK8 1EP
United Kingdom

Trustees Report for the year ended 31st December 2021

Southern Tanzania Elephant Trust present their annual report and audited accounts for the period 1st January 2021 through 31 December 2021 and confirm they comply with the requirements of the Charities Act 2011, the Trust Deed and the Charities SORP (FRS 102).

Charity Trustees

Helen Pearson
Nathaniel Comber
Nick McWilliam

Names and Addresses of Independent Examiner

Shelley Rudling (FMAAT AATQB)
Community 360,
Winsleys House, High Street, Colchester, CO1 1UG

Governing document

The Charity was registered as a Trust on the 6th August 2018 and is governed by a Trust Deed dated 1st August 2018.

Trustee selection method

The first Trustees of the Charity were appointed for a term of three years at the time of registering the Charity. The Trustees were reappointed for another three-year term on 21st July 2021. The current trustees may appoint new trustees by approaching individuals whom the trustees believe would bring necessary skills, knowledge, and experience to the Organization. If the individual is willing to put themselves forward, their appointment is put to the current Trustees for approval.

Objects of the Charity

The objects of the charity are to conserve and protect the African elephant in Tanzania and other African wildlife and habitats in Tanzania for the public benefit.

The trustees identified Southern Tanzania Elephant (STEP) in Tanzania as the organisation whose work the Trust is aiming to support, in accordance with the Trusts' objects, to facilitate the delivery of the UK Charity's objectives.

Vision

Creating a long and peaceful future for elephants in southern Tanzania and for the ecosystems and communities on which they inter-depend.

Mission

To secure a future for elephants in southern Tanzania by, directly and through partnerships, supporting elephant protection, enhancing coexistence between

communities and elephants, strengthening community livelihoods, conducting research and monitoring, and awareness-raising.

Principal Activities

Southern Tanzania is a globally important region for elephant conservation, with elephant populations numbering some 30,000 individuals in 2015, and approximately 70,000 in 2009 before devastating declines from poaching for the ivory trade (Thouless et al. 2016). The region holds 35% of East Africa's elephants, and 7% of Africa's elephants (Thouless et al. 2016). The Ruaha-Rungwa and Udzungwa-Selous ecosystems of southern Tanzania are some of the few elephant strongholds and wilderness areas for large mammals left in the world. The ecosystems and elephant populations of southern Tanzania are a global treasure, requiring global support for their conservation. Elephant conservation in the region faces two main challenges:

Securing elephant populations and habitat: The combined efforts of the Tanzanian government, civil society and international community have greatly reduced the threat of poaching to elephants compared to previous years. However, ongoing protection efforts are needed to secure these important gains and ensure long-term recovery of southern Tanzania's elephant populations. In addition, protecting the integrity of the ecosystems that comprise elephant range is vital to the long-term survival of the elephant populations of this region.

Human-elephant coexistence: Farms and settlements adjacent to protected areas and in elephant corridors and dispersal areas are at risk of elephant damage, as some elephants learn to use crops as a 'high-risk, high-reward' food source. As more land comes under cultivation, elephant habitat and corridors outside of protected areas are also increasingly at risk. Every year people are killed by elephants, often as a result of accidental encounters. This is a complex challenge that requires long-term vision and a multi-faceted approach.

We work to conserve the elephant metapopulation of southern Tanzania through a landscape level approach. The charity's principal activities include:

1. **Supporting elephant protection in critical habitats:** supporting ground and air patrols and providing technical support to under-resourced protected areas in important elephant range, as well as building ranger capacity to map and analyse patrols and outcomes and monitor spatial and temporal trends in illegal activities
2. **Enhancing human-elephant coexistence in communities living with elephants:** working with farmers' groups to protect farms and improve livelihoods through beehive fence projects which deter elephants from farmland and produce elephant-friendly honey; trialling novel crop protection strategies with farmers; providing farmers with access to financial services and improving household resilience through membership and training in Village Savings and Loans Associations; restoration of a critical wildlife corridor between the Udzungwa and Selous ecosystems; and awareness-raising and education activities.
3. **Conducting elephant research to inform conservation efforts:** monitoring elephants in the Ruaha-Rungwa and Udzungwa-Selous ecosystem; assessing spatial and temporal trends in human-elephant interactions and evaluating solutions; and monitoring of wildlife corridors.

Impact for the Year End 31st December 2021

The main activities during the year were increasing protection for elephants through support to wildlife rangers (Section 1), increasing community capacity for human-elephant coexistence through farm-based interventions, supporting farmer livelihoods activities, education and awareness-raising, and corridor restoration (Section 2), and research and monitoring of elephants and human-elephant interactions (Section 3). Capacity building was carried out in a number of ways through these activities.

All activities in Tanzania are carried out by our affiliate organisation in Tanzania, Southern Tanzania Elephant (abbreviated and referred to from here on as STEP), a non-governmental organisation registered on 17th July 2019 under the Non-Governmental Organisation (NGO) Act, 2002 Section 12(2) of Act No. 24 of 2002, with registration number I-NGO/R2/00077. The Tanzanian affiliate Organisation was previously registered as a company limited by guarantee having no share capital (i.e., a not-for-profit company). With the passing of The Written Laws (Miscellaneous Amendments) (No.3) Act, 2019 on 30th June 2019, all companies limited by guarantee having no share capital were required to register under the Non-Governmental Organisation (NGO) Act, 2002 by August 30th 2019.

The Board of Trustees of Southern Tanzania Elephant Trust in the UK (from here on referred to as STET UK) and the Board of STEP Tanzania are responsible for overall management of the organisation, including setting and reviewing strategic plans and budgets, financial matters, reviewing the performance of management, and ensuring adherence to internal control policies and sound governance. and for compliance with sound governance principles. The organisation is committed to the principles of effective governance, integrity, transparency and accountability. STET UK and STEP Tanzania agree on the yearly strategy and budget together. The Trustees of STET UK exercise their discretion when selecting which activities to support by having regard to the Charity Commission's public benefit guidance as well as the following internal criteria:

1) The activity contributes to the conservation of the African elephant in Tanzania through any of the following:

- a. Increasing resources and/or capacity for law enforcement of elephant range
- b. Increasing public awareness of the value of elephants and elephant conservation
- c. Increasing the capacity of rural communities to coexist with elephants
- d. Improving the welfare of rural communities who coexist with elephants
- e. Increasing the availability of research and scientific outputs to inform elephant conservation

(2) It has been demonstrated that the activity provides good value for money

STET UK and STEP Tanzania maintain close contact with regards to implementation of activities. Each Board meets at a minimum twice per year.

Achievements and Performance

1. Supporting elephant protection in critical habitats

The goal of this programmatic area is to enhance protection efforts of rangers and village game scouts through support for ground and air patrols, provision of training and resources, and data optimization. Targeted support is provided to three protected areas selected for their importance to elephants, their biodiversity value, and funding and resource gaps assessed with respective wildlife management authorities. These include MBOMIPA Wildlife Management Area (WMA), a community-managed wildlife area; Uzungwa Scarp Nature Forest Reserve (USNFR), a forest reserve by Tanzania Forestry Services Agency (TFS); and Rungwa-Kizigo-Muhesi Game Reserves (RKM GR), managed by Tanzania Wildlife Management Authority (TAWA). The means by which we provide support include:

- Building the capacity of rangers and Village Game Scouts through training and equipment
- Supporting ground and air patrols
- Mapping and analysing patrol outcomes for strategic patrol planning

1.1 MBOMIPA Protection Project

STEP first began to work with the community-owned MBOMIPA Wildlife Management Area in 2018. In particular, Lunda Zone in MBOMIPA WMA is a critical part of the Ruaha-Rungwa ecosystem and especially important for elephants, as well as other endangered species such as wild dogs and lions. 2021 marked the fourth year of the fruitful collaboration between STEP and MBOMIPA WMA. Patrol support was expanded to cover the Tungamalenga and Kinyangesi zone and now covers 100% of the WMA. STEP supported three teams of Village Game Scouts (VGS) to conduct at least 21 days of foot patrols each per month by supplying scout wages and providing fuel and food supplies. In 2021, VGS covered 10,621 km of foot patrols and 11,067 km of vehicle patrols in the WMA. 100% of patrols were logged using GPS units, with patrol coverage and outcomes mapped every month and analysed by STEP to enhance patrol effectiveness. To facilitate the transfer to mobile data collection using the Survey123 application, STEP provided three Android Black View 9500 smartphones to VGS, as well four GPS units. Also, in October 2021, STEP installed a radio communication system in MBOMIPA WMA and at the STEP offices. The radio communication has helped to reduce communication barriers among the patrol teams and vehicles as well as with the STEP office in all urgent matters. STEP also continued with maintenance and operation of a field vehicle for the WMA to enable monthly rotation of VGS and vehicle patrols. The WMA was supported with 3,960 litres of fuel.



Mobile data collection using the Survey123 app (left); MBOMIPA VGS on patrol (right)

1.2 Uzungwa Scarp Protection Project

Uzungwa Scarp Forest Nature Reserve (USFNR) is a biodiversity hotspot that is home Uzungwa endemics and globally threatened vertebrate species (Rovero et al. 2014) including Sanje mangabey, Udzungwa red colobus, Abbott's duiker, 20 endemic and 14 threatened reptiles (Lyakurwa et al. 2019), and 19 endemic and threatened amphibians. The Reserve also serves as a critical water catchment. USNFR has been under threat from anthropogenic activities (Harrison 2006) such as wildfire, logging, forest encroachment for agriculture, and illegal hunting (Topp-Jørgensen et al. 2009). Severe population declines have been documented for several threatened species, attributed to hunting and trapping (Rovero et al. 2015).

With support from and in collaboration with Wild Planet Trust (WPT, formerly Whitley Wildlife Conservation Trust), Bristol Chester Zoo, and Association Mazingira, STEP began supporting the protection of Uzungwa Scarp Nature Forest Reserve in late 2017. The Uzungwa Scarp Protection Project supports with funding of ground patrols, training of rangers, and provision of essential equipment. In 2021, STEP supported 19 mobile camping patrols, each lasting 5 days, by Village Scouts, rangers from Tanzania Forestry Services and Iringa Anti-Poaching Unit in Uzungwa Scarp Nature Forest Reserve. All patrols were strategically planned and executed, with mapping, analysis and reporting of findings subsequent to each patrol. Patrol teams covered 784 km, a >90% increase relative to 2020. These patrols resulted in the removal of 473 snares and closure of 19 timber cutting sites. STEP also conducted its first 'benefit audit' in an attempt to better

understand the perceptions of the communities who live around USNFR with regards to the advantages that they see from the Protected Area.



VGS in USNFR

1.3 Rungwa-Kizigo-Muhesi Game Reserves

In 2021, the STEP pilot team covered 48.5 hours of both anti-poaching and rescue missions in the Rungwa-Kizigo-Muhesi Game Reserves. Nineteen flights were flown to points of interest supplied by the RKM management, covering 3,967 km of linear transects. Thirteen poacher camps and 18 timber cutting sites were identified from aerial patrols. Due to heavy rains, exchange of rangers from the Reserve headquarters to Makwasa Ranger post was challenging. Patrol vehicles could not reach the ranger post due to flooding of both the Makwasa and Nyasigogo Rivers. Game Reserve Management formally requested STEP to help support the four rangers who were at the Makwasa Ranger Post with supplies. The STEP pilot also helped to deploy four additional rangers to the Makwasa ranger post who stayed on duty for February 2021.

Furthermore, Rungwa-Kizigo-Muhesi Game Reserves rangers conducted 12,141 km of vehicle patrols with STEP fuel support, thereby helping to detect and respond to threats such as tree cutting, illegal mining, illegal grazing and bushmeat poaching.



Rungwa-Kizigo-Muhesi Game Reserves from the air during the wet season of 2021

1.4 Capacity building

As part of the Uzungwa Scarp Protection Project, STEP provided monthly technical support to USNFR's staff and VGS in collection, storage, analysis, mapping, and reporting of patrol data. This support helps USNFR management to plan patrols in a strategic manner and to produce monthly patrol reports and annual reports. STEP also facilitated two technical training workshops for 214 scouts (32% women) and 17 rangers from the villages around USNFR. Teams were trained in mobile data collection, camera trapping, human rights, and use of GPS to map patrols. STEP also trained 17 TFS staff (14% women) on the use of GPS, mobile data collection (Survey 123), camera trapping, chain of arrest, and human rights. The training aimed to equip foresters with new patrol data collection techniques and refresh their GPS skills, as well as review the chain of arrest procedures and Human Rights. STEP also donated tents, tarps, gumboots, sleeping pads, raincoats, uniforms, cooking utensils, and first aid kit contents to facilitate more effective patrols.

In MBOMIPA WMA, STEP facilitated four technical trainings for 40 VGS which covered deployment of camera traps, mobile data collection using Survey 123, radio communications and a refresher course on data collection on patrol.



TFS rangers during training

2. Enhancing human-elephant coexistence in communities living with elephants

The goal of this programmatic area is to enhance coexistence between people and elephants in communities living in and alongside elephant range. We support communities to coexist with elephants in two project areas, the Kilombero Valley in Morogoro region, and the western boundary of Rungwa-Kizigo-Muhesi Game Reserves in Singida region. These areas are hotspots of elephant impact, with regular movement of elephants onto village land and frequent crop damage. The means by which we build capacity for coexistence include:

- Supporting farmers to implement farm-based mitigation methods to reduce crop losses to elephants
- Conducting education and awareness-raising events in villages affected by human-elephant conflict to explain elephant behaviour, provide context for human-elephant interactions and provide advice on how to stay safe around elephants
- Collect data on elephant movements and use this to inform education and trials of crop protection measures
- Work with Village Governments to understand the drivers of HEC and work towards establishing Land Use Plans that facilitate human-elephant coexistence.
- Explore and support establishment of corridors to facilitate safe elephant movement

- Immersive hands-on training and development opportunities for students and early career conservationists from inside and outside of Tanzania, many of whom go on to work for other organisations

2.1 Kilombero Valley

The Kilombero Valley, in the Uzungwa-Selous ecosystem, is a densely populated, fertile matrix of

villages, agriculture and grazing land. Elephants regularly attempt to cross the short distance of ~10km across the valley, between Uzungwa Mountains National Park and Magombera Forest Reserve on the edge of Nyerere National Park (formerly Selous Game Reserve). Less than 50 years ago, there was continuous forest across the valley: today, the forest has been fragmented by rapid land conversion due to agriculture. The route is a critical connection between the western and southern elephant metapopulations of Tanzania (over 30,000 individuals) and the only link that can be maintained and restored. Intensive agriculture in the valley has created a hard edge between forest and farmland, making farms vulnerable to elephant crop damage. The multi-faceted land use challenges of the Valley have informed STEP's approach to building human-elephant coexistence in the Kilombero Valley through limiting elephant movement into farmland and settlement through farm-based interventions, facilitating safe elephant movement through a designated wildlife corridor, and supporting income diversification and awareness-raising events.

2.1.1 Farm-based interventions, Village Savings and Loans Associations, and Awareness-Raising

To date, STEP has supported seven farmers groups (146 farmers) registered as Community-Based Organisations to establish seven beekeeping projects (6.8km of beehive fences) in the Kilombero Valley to protect agricultural fields from elephants. In addition to reducing elephant movement into farmland and settlement, beehive fences generate revenue for farmers' groups through the sale of honey. Economic resilience is an important factor in building human-elephant coexistence. If a household's economic resources are depleted by an incident of crop raiding by an elephant, it is unlikely that members of the household will be willing to tolerate the presence of that elephant. STEP continued to support its existing groups with field visits, in depth follow up and refresher training. STEP also supported four farmers groups with construction of beehive huts. The aim of these beehive huts is to capture bee colonies and increase honey yields for farmers' groups. The activity includes moving unoccupied hives from the beehive fence to the beehive hut and moving them back to the fence once they are occupied. STEP also continued to operate the Udzungwa Honey Collection Centre, of which all STEP beekeeping groups are members, to enable the processing and packaging of honey generated by beehive fences. More than 262 litres of honey was harvested in 2021. The honey was processed and packed at the Honey Collection Centre. Beekeeping groups also received training targeted at improving hive occupancy and optimizing occupancy to boost hive yields. Each group was also provided with 10 catch boxes as a new method for increasing beehive occupancy.

STEP also works with farmers' groups to establish Village Savings and Loan Associations (VSLAs), informal financial systems in which members have access to credit and financial assistance through weekly contributions. Members can take loans from VSLAs and have access to emergency financial relief. By increasing community and household resilience to human-wildlife conflict, VSLAs can contribute to increasing coexistence. In 2021, we supported the establishment of one new Village Savings and Loan Association and continued to support five existing VSLAs. 104 farmers participated in VSLAs and took out 112 loans with a value of TZS 13,996,000/- to build small businesses, improve their farming practices, pay school fees, and to support household cash needs (e.g. payments for medication, food). Such access to credit is highly valued by VLSA members in our project area. Prior to VSLAs, farmers' options for accessing credit either required travelling >50 km to a larger commercial centre and seeking a loan from a formal financial institution, or engaging in 'prospective' rice selling. If members of the VSLA

wanted to access credit sizes similar to their total loan size from the VSLA, some would have had to part with six bags of rice or more, representing an enormous loss to future earnings and a significant blow to household food supplies. Therefore, the existence of the VSLA itself is impactful through creation of an alternative source of credit. In 2021, STEP began trialling a mobile app, CHOMOKA, to increase transparency and efficiency in VSLA record keeping. We plan to move 80% of VSLAs to CHOMOKA in 2022.

2.1.2 Awareness-Raising and Education

In 2021, STEP conducted film nights in 8 villages, reaching 2,213 adults and youth. We also distributed over 1000 copies of flyers containing information about human-elephant coexistence, methods to stay safe when you come across an elephant, benefits of elephants, the life of elephants, and mitigation strategies to reduce human-elephant conflict. STEP also taught a 3-module course on human-elephant coexistence in 11 primary schools and 3 secondary schools, reaching over 1,060 students. The modules covered 1) Elephant Behaviour, Ecology, and Biology 2) Human-Elephant Coexistence, and 3) Wildlife connectivity. STEP also distributed over 2000 booklets to students which contained valuable information about elephants and how to stay safe around elephants. STEP also began a small pilot bringing primary and secondary students to national parks as an experiential supplement to educational outreach. More than 50 students visited Udzungwa Mountains National Park, learned about elephant research and monitoring and had the opportunity to experience Tanzania's rich natural heritage.



Students on park visit to Udzungwa Mountains National Park

2.1.3 Corridor Restoration

2021 saw significant progress towards our long-term vision of restoring the Kilombero Elephant Corridor between the Udzungwa Mountains and Nyerere National Parks, via the Magombera Forest Nature Reserve. The goal is to peacefully manage the regular movements that elephants make across the Kilombero Valley, even though their once forested routes have been turned into farmland over the last 50 years. STEP has been

facilitating this multi-stakeholder restoration project since 2018, involving communities, civil society, Government and the private sector to restore this ecological connectivity, and enhance food and personal security for the local farming population. At the heart of the corridor project are the communities of the three villages of Sole, Mang'ula A and Kanyenja, who have agreed to setting aside ~7% of the village land to enable the corridor. In early 2021, construction of Tanzania's first ever elephant underpass was completed on the Mikumi-Ifakara highway, and will be opened as soon as the corridor is demarcated. Unfortunately, this year, two elephants were killed by a train while they were crossing the railway that also passes through the corridor. Working towards an effective rail underpass is another challenge that we are facing and working on. In September, a major step forward was achieved when the Regional Commissioner of Morogoro inaugurated the Kilombero Elephant Corridor Management Committee. Chaired by the District Commissioner and comprising village and other community leaders, the Committee also has representatives of Tanzania National Parks, the National Land Use Planning Commission, and the Ministry of Natural Resources and Tourism. Throughout 2021, STEP continued the long-term work of building consensus with owners of the farm plots within the 1.81 km² corridor, as well as raising funds to ensure that each of these households who are giving up one or two acres of land are fairly compensated. By the end of the year, 270 farmers had agreed to their land being formally evaluated by the District Government Valuation Team and the final compensation amounts for each parcel were calculated. Following careful review and approval, compensation payments began in early 2022 and are moving rapidly ahead. STEP has invited all 270 households to financial training, and is also organising Village Savings and Loans Association groups for these 'corridor farmers' to further enhance their financial security in the long term. There are also plans, as requested by the farmers, for ongoing tailored trainings including on modern agricultural technologies and methods for improving yields.

2.2 Rungwa-Kizigo-Muhesi

Bordering Ruaha National Park to the north and west, Rungwa-Kizigo-Muhesi Game Reserves comprise 15,200 km² of wildlife habitat. Historically an elephant stronghold within East Africa, the area lost 60% of its elephants between 2009 and 2015 to poaching (Thouless et al. 2016). Between 2015 and 2018, the elephant population remained stable. However, human-elephant conflict is a rapidly emerging threat to elephants in the area. Human settlement along protected boundaries, in conjunction with a lack of land use planning, has led to more frequent human-elephant interactions. STEP works to mitigate human-elephant conflict in villages on the western edge of Rungwa Game Reserve through a combination of farm-based interventions, establishment of Village Savings and Loans Associations, and awareness-raising and education activities.

2.2.1 Farm-based interventions and Village Savings and Loans Associations

STEP started five new VSLAs in the sub-villages around Rungwa and Doroto, bringing the total number of VSLAs to eight. These are highly mobile and dynamic communities of agro-pastoralists. Across the eight groups, 175 members had access to 144 loans with a value of 29,232,500 TZS (~\$12,500.00). These loans supported establishment of small businesses and agricultural activities. STEP is trialling a mobile app, CHOMOKA, to increase transparency and efficiency in record keeping. Five of eight groups are currently using CHOMOKA.

In 2021, we continued to support the 46 farmers who had been given beehives in 2020 (20 in Rungwa and 26 in Doroto) with beekeeping. Each farmer was given three modern hives and provided with training on modern hives for beekeeping. In 2021, farmers who were given modern beehives by STEP harvested 350 litres of honey, a nine-fold increase when compared to 2020.



VLSA meeting in Doroto village

2.2.1 Awareness-Raising and Education

In 2021, we continued and expanded community outreach and education efforts. In partnership with TAWA and Itigi District Council, STEP conducted a workshop about human-elephant coexistence in May 2021 with 32 participants representing the local communities from 9 villages. The participants came from areas experiencing frequent interactions between humans and elephants along the Rungwa-Kizigo-Muhesi Game Reserve boundary. The workshop aimed to equip participants with an accurate understanding of elephant population dynamics in Tanzania over the last fifty years and their relationship to human population growth in the country over the same period. The workshop also helped us learn which villages and sub-villages were priority areas for elephant monitoring and efforts to enhance human-elephant coexistence.

In collaboration with Tanzania Wildlife Management Authority and Itigi District Council, STEP's Human-Elephant Coexistence team hosted the third instalment of the *Tembo Cup* Football Tournament in November 2020 (Tembo is Swahili for elephant). The tournament involved villages experiencing human-elephant conflict adjacent to Rungwa-Kizigo-Muhesi Game Reserve. The coverage of the tournament was expanded to ten villages in two zones: Rungwa and Muhesi. The tournament aimed to raise awareness about human-elephant coexistence, the benefits of protected areas, and to create a positive association with elephants through an engaging community activity. During the tournament, 36 matches were played, which were attended by approximately 12,850 people. In addition to football matches, film nights, community training and training at schools were conducted. The training sessions focused on building a culture and norm of loving and respecting elephants, as well as on safety around elephants to handle potential encounters with elephants on foot on village land.

- Over 12,850 people attended football matches, and 300 people attended netball matches
- Over 3,700 students were trained at twenty primary schools and a secondary school
- Over 2,500 children were trained during football matches

- Over 4,500 people attended film nights at which Swahili-language wildlife films were shown
- Over 2,000 people assembled for community training held before or immediately following matches
- For the first time, the Tembo Cup hosted netball matches, a game played by women in Tanzania. Six teams participated and we hope more will join in 2022.



One of STEP's local elephant monitors conducting awareness-raising at the Tembo Cup football tournament



Women's netball team participating in the Tembo Cup netball tournament

2.3 Capacity building

In 2021, one Tanzanian student and two Tanzanian volunteers participated in human-elephant coexistence activities and learned fieldwork and community engagement methods.

STEP hosted nine members of a Rapid Response Task Force formed by the Tanzania Wildlife Management Agency (TAWA) and trained them on our beehive fence model. This unit will be called to support communities as they respond to human-wildlife conflict as part of Tanzania's National Human-Wildlife Conflict Strategy

In December 2021, STEP hosted 18 rangers from protected areas across southern Tanzania, representing TAWA, TANAPA and KDU. These rangers completed a two-week intensive bushwalking course where they learned the foundations of elephant behaviour and how elephants utilise their habitats. The rangers then applied this knowledge to training on a human-elephant conflict mitigation tool kit, developed by Honeyguide Foundation. Teams considered their operating environments, the types of situations in which they encounter human-elephant conflict and new ways to deter elephants, integrating their knowledge on animal behaviour. This multifaceted training helped to address central aspects of Tanzania's Human-Wildlife Conflict Strategy.



Rangers receiving HWC response training

To support more effective human-wildlife conflict response by protected area management agencies, STEP also provided almost 10,000 litres of fuel Rungwa-Kizigo-Muhesi Game Reserves, Uzungwa Mountains National Park, and Nyerere National Parks for HWC response.

Our trained village-based team (Local Elephant Monitors) continued with data collection and training for farmers. While surveying elephant activity, they visit and train farmers affected by elephant damage in their communities. In 2021, over 2,000 farmers were trained in two villages (Rungwa, and Doroto) by this team. The training focused on staying safe, measures to avoid or reduce human activities in areas preferred by wild animals, and ways to protect crops from elephants, such as improving food stores and using chilli.

3. Conducting elephant research to inform conservation efforts

The goal of this programmatic area is to collect and analyse data to inform the formulation of meaningful and sound conservation strategies, as well as to monitor the impact of our conservation work. The geographic focus of this program comprises the Ruaha-Rungwa and Uzungwa-Selous ecosystems. The main activities under this program include:

- Running a long-term elephant research project in Ruaha National Park to assess population status and to investigate tusklessness, ecology and behaviour
- Monitoring elephant distribution and status in the forests of the Uzungwa Mountains
- Monitoring wildlife corridors

- Assessing spatial and temporal trends in human-elephant interactions and evaluating solutions
- Collaboration and development opportunities for early career researchers from inside and outside of Tanzania

3.1 Monitoring elephants in the Ruaha-Rungwa ecosystem

The elephant monitoring program in Ruaha National Park under STEP's affiliated research project aims to collect long-term data on elephant population structure, tusklessness, distribution and behaviour. In 2021, the research team conducted intensive dry season fieldwork to enable a new demographic assessment for the Ruaha elephant population. The demographic assessment will describe the current age-and-sex structure of the population and will help us understand to what extent the Ruaha elephant population has begun to recover from the effects of the poaching crisis of 2009-2015. In 2021, we welcomed a new Tanzanian researcher, Loyce Majige, to the team. Loyce has a lifelong passion for conservation and elephants and joined STEP while completing her Master's in Conservation Management of African Ecosystems at the University of Glasgow, Scotland. Loyce was also part of the inaugural class of the Grumeti Fund's *Women in the Field Program*, a skills training initiative for Tanzanian women conservationists, and is a role model and source of guidance for other young women interested in a career in conservation.

3.2 Monitoring elephants in Uzungwa-Selous

A key objective of STEP's work in the Kilombero Valley is to support the recovery of the Uzungwa-Selous elephant population and to secure long-term connectivity for elephants between Uzungwa and Selous through restoration of the Kilombero Elephant Corridor, a historic corridor that spans the Kilombero Valley. To monitor our progress toward this objective, we monitor elephant presence and status in Mwanihana and Magombera forest, which form endpoints of the Kilombero Elephant Corridor, as well as elephant presence in the corridor area. We hope to see an increase in elephant use of the forest and corridor area over time as a result of our conservation efforts. In 2021, we continued monitoring of elephants in Mwanihana forest (first begun in 2015) and Magombera forest (begun in 2019) to collect data on elephant use of these forests through foot transects. Our monitoring suggests that elephant use of Mwanihana forest in Uzungwa has increased over the past six years – a positive indication that the forest is becoming safer for elephants.

3.3. Studying human-elephant interactions

To help plan and evaluate human-elephant coexistence strategies, we continued to monitor elephant activity and crop losses on village land. In 2021, we worked with 12 local elephant monitors (LEMs) across seven villages in the Rungwa-Doroto and Kilombero valley project areas. Each elephant monitor is provided with training and regular performance feedback, and a GPS unit. All data collection is done using KoboCollect. These data informed our work in a number of ways, including 1) to help us select locations for trials of novel elephant deterrents, 2) to assess baseline crop damage to elephants prior to restoration of the Kilombero Elephant Corridor; and 3) to evaluate trials of novel crop protection methods.



Local elephant monitors receiving training in KoboCollect, a mobile data collection app

3.4 Trialling farm-based interventions

Finding affordable and effective ways to protect farms from elephants is one way that we aim to enhance coexistence between people and elephants. STEP is seeking to expand its portfolio of crop protection measures through comprehensive trials of the effectiveness of smelly repellent (a foul-smelling fermented mixture) as an elephant deterrent. Our trials of smelly repellent fencing are the most extensive trials of this method to date, and our rigorous monitoring has given us a clear understanding of efficacy. We learned that the repellent deters elephants attempting to enter farmland more than half of the time, but also that there is a risk of elephants habituating to the repellent. Through interviews, we learned that farmers perceive the repellent to be effective and that there is a broad interest in using this method to protect their crops, but that the primary barrier to farmer uptake is cost; hence, future work will explore ways to lower costs. We presented the results of our smelly repellent trials at the Tanzania Wildlife Research Institute scientific conference and are pleased that our experience and approach have informed trials of smelly repellent fencing in Zambia and Kenya.



Elephant caught on camera trap at the smelly repellent trial fence

3.5 Capacity building

Master's student support

One of our goals is to build capacity for research in Tanzania and, in doing so, facilitate scientific studies that inform our elephant conservation work. To this end, we launched an initiative in 2021 to support Tanzanian Masters students in the conservation field. Through this initiative, we help students to design a research project and provide mentoring and training in data collection methods and data analysis, as well as provide a bursary to support their fieldwork. In 2021, we supported two students from the Sokoine University of Agriculture: Irene Laizer and Lowassa Moitiko. Irene is studying how people and elephants share water sources located on village land adjacent to Rungwa-Kizigo-Muhesi Game Reserves, and Lowassa is studying the age-and-sex structure and activity patterns of elephants at the forest-farm interface in the Kilombero Valley. Through this training opportunity, Irene and Lowassa have gained a valuable skill set and field experience that we hope will serve them well in their conservation journey. Their theses, which are expected in the second half of 2022, will also help inform STEP's conservation work. In 2021, STEP also continued a research collaboration with a student from the University of Newcastle, who completed her Masters' thesis using data from STEP's research data.



Master's student Irene Laizer conducting interviews

Training on human-wildlife interactions

A first step towards managing human-wildlife conflicts is to assess human-wildlife interactions, including developing a better understanding of wildlife impacts and animal behaviour. To better equip practitioners to conduct such assessments, STEP and the Polish Mammal Research Institute facilitated training on methods for assessing human-wildlife interactions, with a special focus on mobile data collection, the use of GIS, and camera traps, as well as their applications to monitoring of human-wildlife interactions. The training was attended by 15 practitioners from a range of institutions, including Tanzania National Parks, Tanzania Wildlife Management Authority, academic institutions, District Government and NGOs. As well as learning a range of new technical skills, participants discussed how to apply what they had learned in each of their daily roles.



Participants learn GIS skills to help them assess human-wildlife conflict hotspots

References

Harrison, P. (2006). Socio-economic study of forest-adjacent communities from Nyanganje forest to Uzungwa Scarp: a potential wildlife corridor. *Incorporating livelihood assessments and options for future management of Uzungwa forests. World Wide Fund (WWF) for Nature, Dar es Salaam.*

Jones, T., Cusack, J.J., Pozo, R.A., Smit, J., Mkuburo, L., Baran, P., Lobora, A.L., Mduma, S. and Foley, C., 2018. Age structure as an indicator of poaching pressure: Insights from rapid assessments of elephant populations across space and time. *Ecological Indicators*, 88, pp.115-125.

King, L.E., Douglas-Hamilton, I. and F. Vollrath (2011). Beehive fences as effective deterrents for crop-raiding elephants: field trials in northern Kenya. *African Journal of Ecology* 49: 431-439.

Lyakurwa, J. V., Howell, K. M., Munishi, L., & Treydte, A. C. (2019). Uzungwa Scarp Nature Forest Reserve: a unique hotspot for reptiles in Tanzania.

Rovero, F., Menegon, M., FjeldsAa, J., Collett, L., Doggart, N., Leonard, C., ... & Burgess, N. D. (2014). Targeted vertebrate surveys enhance the faunal importance and improve explanatory models within the Eastern Arc Mountains of Kenya and Tanzania. *Diversity and Distributions*, 20(12), 1438-1449.

Rovero, F., Mtui, A., Kitegile, A., Jacob, P., Araldi, A., & Tenan, S. (2015). Primates decline rapidly in unprotected forests: evidence from a monitoring program with data constraints. *PLoS One*, 10(2), e0118330.

Thouless, C., Dublin, H. T., Blanc, J. J., Skinner, D. P., Daniel, T. E., Taylor, R. D., ... & Bouché, P. (2016). African elephant status report 2016. *Occasional Paper Series of the IUCN Species Survival Commission*, 60.

Topp-Jørgensen, E., Nielsen, M. R., Marshall, A. R., & Pedersen, U. (2009). Relative densities of mammals in response to different levels of bushmeat hunting in the Uzungwa Mountains, Tanzania. *Tropical Conservation Science*, 2(1), 70-87.

Scheijen, C. P., Richards, S. A., Smit, J., Jones, T., & Nowak, K. (2019). Efficacy of beehive fences as barriers to African elephants: a case study in Tanzania. *Oryx*, 53(1), 92-99

Policy on Reserves

The Charity operates with limited cash reserves. The Trustees' objective is to maintain a sufficient balance to meet committed expenditure on current projects and cover foreseeable administration expenses.

Financial Review

The accounts are provided as a separate document.

Approved by the trustees on 23.10.2022 and signed on their behalf by:

Helen Pearson

A handwritten signature in black ink, appearing to be 'serke', enclosed within a thin black rectangular border.

Dated: 23.10.2022

SOUTHERN TANZANIA ELEPHANT TRUST

Charity registration number 1179460

**FINANCIAL STATEMENTS
FOR THE PERIOD ENDED 31 DECEMBER 2021**

SOUTHERN TANZANIA ELEPHANT TRUST

CONTENTS FOR THE PERIOD ENDED 31 DECEMBER 2021

	Page
Legal and Admin Information	1
Independent examiner's report	2
Receipts and payments account	3
Statement of assets & liabilities	4
Notes to the financial statements	5

SOUTHERN TANZANIA ELEPHANT TRUST

LEGAL & ADMIN INFORMATION FOR THE PERIOD ENDED 31 DECEMBER 2021

Status

The trust was formed as an incorporated charity on 1st August 2018.

Trustees

Nicholas McWilliam
Helen Pearson
Nat Comber

Charity number

1179460

Independent Examiner

Community360
Winsley's House
High Street
Colchester
CO1 1UG

Business address

30 Barn Road
Stirling
FK8 1EP

Bankers

Natwest
Cleveleys Branch
Lancs
FY5 2AL

SOUTHERN TANZANIA ELEPHANT TRUST

INDEPENDENT EXAMINER'S REPORT FOR THE YEAR ENDED 31 DECEMBER 2021

I report on the accounts of Southern Tanzania Elephant Trust for the year ended 31st December 2021 which are set out on pages 3 to 5.

Respective responsibilities of trustees and examiner

The Charity's Trustees are responsible for the preparation of the accounts. The Charity's Trustees consider that an audit is not required for this year (under section 144 (2) of the Charities Act 2011 (The Act) but that an independent examination is needed.

It is my responsibility to:

- Examine the accounts under section 145 of the Charities Act,
- To follow the procedures laid down in the General Directions given by the Charity Commissioners (under section 145(5)(b) of the Charities Act, and
- To state whether particular matters have come to my attention.

Basis of independent examiner's Statement

My examination was carried out in accordance with the General Directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the Charity and a comparison of the accounts presented with those records. It also includes considerations of any unusual items or disclosures in the accounts, and seeking explanations from you as trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit and consequently I do not express an audit opinion on the view given by the accounts.

Independent examiner's statement

In the course of my examination, no material matters have come to my attention which gives me cause to believe that in, any material respect:

- the accounting records were not kept in accordance with section 130 of the Charities Act; or
- the accounts did not accord with the accounting records; or
- the accounts did not comply with the applicable requirements concerning the form and content of the accounts set out in the Charities (Accounts and Reports) Regulations 2008 other than any requirement that the accounts give a true and fair' view which is not a matter considered as part of an independent examination.

I have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Shelley-Marie Rudling FMAAT AATQB for and on behalf of:

Community360

Winsley's House, High Street, Colchester, Essex



Date 31.10.2022

SOUTHERN TANZANIA ELEPHANT TRUST

RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD ENDED 31 DECEMBER 2021

	Notes	Unrestricted Fund £	Restricted Fund £	2021 Total £	2020 Total £
Receipts					
Donations, legacies and other similar receipts	2	4,993	42,036	47,029	59,399
Total receipts		<u>4,993</u>	<u>42,036</u>	<u>47,029</u>	<u>59,399</u>
Charitable payments					
Charitable activities	3	3,277	45,294	48,571	8,668
Governance		400	-	400	-
Total payments		<u>3,677</u>	<u>45,294</u>	<u>48,971</u>	<u>8,668</u>
Net of receipts/(payments)		<u>1,316</u>	<u>(3,258)</u>	<u>(1,942)</u>	<u>50,731</u>
Cash funds as at 1 December 2020		1,009	94,696	95,705	44,974
Cash funds as at 31 December 2021	4	<u><u>2,325</u></u>	<u><u>91,438</u></u>	<u><u>93,763</u></u>	<u><u>95,705</u></u>

Notes on pages 5 form part of these accounts

SOUTHERN TANZANIA ELEPHANT TRUST

STATEMENT OF ASSET AND LIABILITIES AS AT 31 DECEMBER 2021

	Notes	2021 £	2020 £
<u>Monetary assets</u>			
Cash at bank and in hand:		93,763	95,705
Total monetary assets		93,763	95,705
<u>Funds</u>			
Unrestricted	4	2,325	1,009
Restricted	4	91,438	94,696
Total Funds		93,763	95,705
<u>Other monetary assets</u>			
<u>Liabilities</u>			
Independent examiner fee	5	400	400
		400	400

These accounts were approved by the Trustees and signed on their behalf by :

Signed: 

Date: 30/10/2022

Helen Pearson

SOUTHERN TANZANIA ELEPHANT TRUST

NOTES TO THE ACCOUNTS FOR THE PERIOD ENDED 31 DECEMBER 2021

- The financial statements have been prepared in accordance with Accounting and Reporting by Charities: Statement on Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019)- (Charities SORP (FRS 102)), the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) and the Companies Act 2006.

The accounts are prepared under receipts and payments basis.

Period

These accounts cover a 12 month period from 1st January 2021 to 31st December 2021.

2. Donations, legacies and other similar receipts		Unrestricted Fund	Restricted Fund	2021 Total	2020 Total
		£	£	£	£
Donations		4,993	42,036	47,029	59,399
		4,993	42,036	47,029	55,444
3. Charitable activities		Unrestricted Fund	Restricted Fund	2021 Total	2020 Total
		£	£	£	£
Insurance		247	-	247	268
Self employed		3,010	1,190	4,200	8,400
Donation		-	44,104	44,104	-
Bank charges		20	-	20	-
		3,277	45,294	48,571	8,668
4. Cash Funds	Balance at 01/01/21	Incoming	Outgoing	Transfers	Balance at 31/12/21
	£	£	£	£	£
Unrestricted					
General fund	1,009	4,993	(3,677)	-	2,325
	1,009	4,993	(3,677)	-	2,325
Restricted Funds					
Wild Planet Trust	44,720	17,000	(30,139)	-	31,582
Bristol Chester Zoo	9,525	-	(4,875)	-	4,650
Association Mazingira	19,834	-	(10,280)	-	9,554
MBOMIPA Protection Project	3,534	20,000	-	-	23,534
Corridor restoration	17,083	-	-	-	17,083
Pro Wildlife	-	5,036	-	-	5,036
Totals	94,696	42,036	(45,294)	-	91,439

- The Independent Examiners Fee will be £400.00.
- No remuneration was paid to any trustee or to any person(s) known to be connected with any of them.
- There were no related parties within the year.
- The charity is operating on a going concern basis.
- During the year, there were Nil employees (2020: Nil).

Charity number: 1179460



Southern Tanzania Elephant Trust
Annual Report and Accounts for the Year ended
31st December 2021

Charity Name: Southern Tanzania Elephant Trust

Registered Charity Number: 1179460

Principal Address:

30 Barn Road
Stirling
FK8 1EP
United Kingdom

Trustees Report for the year ended 31st December 2021

Southern Tanzania Elephant Trust present their annual report and audited accounts for the period 1st January 2021 through 31 December 2021 and confirm they comply with the requirements of the Charities Act 2011, the Trust Deed and the Charities SORP (FRS 102).

Charity Trustees

Helen Pearson
Nathaniel Comber
Nick McWilliam

Names and Addresses of Independent Examiner

Shelley Rudling (FMAAT AATQB)
Community 360,
Winsleys House, High Street, Colchester, CO1 1UG

Governing document

The Charity was registered as a Trust on the 6th August 2018 and is governed by a Trust Deed dated 1st August 2018.

Trustee selection method

The first Trustees of the Charity were appointed for a term of three years at the time of registering the Charity. The Trustees were reappointed for another three-year term on 21st July 2021. The current trustees may appoint new trustees by approaching individuals whom the trustees believe would bring necessary skills, knowledge, and experience to the Organization. If the individual is willing to put themselves forward, their appointment is put to the current Trustees for approval.

Objects of the Charity

The objects of the charity are to conserve and protect the African elephant in Tanzania and other African wildlife and habitats in Tanzania for the public benefit.

The trustees identified Southern Tanzania Elephant (STEP) in Tanzania as the organisation whose work the Trust is aiming to support, in accordance with the Trusts' objects, to facilitate the delivery of the UK Charity's objectives.

Vision

Creating a long and peaceful future for elephants in southern Tanzania and for the ecosystems and communities on which they inter-depend.

Mission

To secure a future for elephants in southern Tanzania by, directly and through partnerships, supporting elephant protection, enhancing coexistence between communities and elephants, strengthening community livelihoods, conducting research and monitoring, and awareness-raising.

Principal Activities

Southern Tanzania is a globally important region for elephant conservation, with elephant populations numbering some 30,000 individuals in 2015, and approximately 70,000 in 2009 before devastating declines from poaching for the ivory trade (Thouless et al. 2016). The region holds 35% of East Africa's elephants, and 7% of Africa's elephants (Thouless et al. 2016). The Ruaha-Rungwa and Udzungwa-Selous ecosystems of southern Tanzania are some of the few elephant strongholds and wilderness areas for large mammals left in the world. The ecosystems and elephant populations of southern Tanzania are a global treasure, requiring global support for their conservation. Elephant conservation in the region faces two main challenges:

Securing elephant populations and habitat: The combined efforts of the Tanzanian government, civil society and international community have greatly reduced the threat of poaching to elephants compared to previous years. However, ongoing protection efforts are needed to secure these important gains and ensure long-term recovery of southern Tanzania's elephant populations. In addition, protecting the integrity of the ecosystems that comprise elephant range is vital to the long-term survival of the elephant populations of this region.

Human-elephant coexistence: Farms and settlements adjacent to protected areas and in elephant corridors and dispersal areas are at risk of elephant damage, as some elephants learn to use crops as a 'high-risk, high-reward' food source. As more land comes under cultivation, elephant habitat and corridors outside of protected areas are also increasingly at risk. Every year people are killed by elephants, often as a result of accidental encounters. This is a complex challenge that requires long-term vision and a multi-faceted approach.

We work to conserve the elephant metapopulation of southern Tanzania through a landscape level approach. The charity's principal activities include:

1. **Supporting elephant protection in critical habitats:** supporting ground and air patrols and providing technical support to under-resourced protected areas in important elephant range, as well as building ranger capacity to map and analyse patrols and outcomes and monitor spatial and temporal trends in illegal activities
2. **Enhancing human-elephant coexistence in communities living with elephants:** working with farmers' groups to protect farms and improve livelihoods through beehive fence projects which deter elephants from farmland and produce elephant-friendly honey; trialling novel crop protection strategies with farmers; providing farmers with access to financial services and improving household resilience through membership and training in Village Savings and Loans Associations; restoration of a critical wildlife corridor between the Udzungwa and Selous ecosystems; and awareness-raising and education activities.
3. **Conducting elephant research to inform conservation efforts:** monitoring elephants in the Ruaha-Rungwa and Udzungwa-Selous ecosystem; assessing spatial and temporal trends in human-elephant interactions and evaluating solutions; and monitoring of wildlife corridors.

Impact for the Year End 31st December 2021

The main activities during the year were increasing protection for elephants through support to wildlife rangers (Section 1), increasing community capacity for human-elephant coexistence through farm-based interventions, supporting farmer livelihoods activities, education and awareness-raising, and corridor restoration (Section 2), and research and monitoring of elephants and human-elephant interactions (Section 3). Capacity building was carried out in a number of ways through these activities.

All activities in Tanzania are carried out by our affiliate organisation in Tanzania, Southern Tanzania Elephant (abbreviated and referred to from here on as STEP), a non-governmental organisation registered on 17th July 2019 under the Non-Governmental Organisation (NGO) Act, 2002 Section 12(2) of Act No. 24 of 2002, with registration number I-NGO/R2/00077. The Tanzanian affiliate Organisation was previously registered as a company limited by guarantee having no share capital (i.e., a not-for-profit company). With the passing of The Written Laws (Miscellaneous Amendments) (No.3) Act, 2019 on 30th June 2019, all companies limited by guarantee having no share capital were required to register under the Non-Governmental Organisation (NGO) Act, 2002 by August 30th 2019.

The Board of Trustees of Southern Tanzania Elephant Trust in the UK (from here on referred to as STET UK) and the Board of STEP Tanzania are responsible for overall management of the organisation, including setting and reviewing strategic plans and budgets, financial matters, reviewing the performance of management, and ensuring adherence to internal control policies and sound governance. and for compliance with sound governance principles. The organisation is committed to the principles of effective governance, integrity, transparency and accountability. STET UK and STEP Tanzania agree on the yearly strategy and budget together. The Trustees of STET UK exercise their discretion when selecting which activities to support by having regard to the Charity Commission's public benefit guidance as well as the following internal criteria:

1) The activity contributes to the conservation of the African elephant in Tanzania through any of the following:

- a. Increasing resources and/or capacity for law enforcement of elephant range
- b. Increasing public awareness of the value of elephants and elephant conservation
- c. Increasing the capacity of rural communities to coexist with elephants
- d. Improving the welfare of rural communities who coexist with elephants
- e. Increasing the availability of research and scientific outputs to inform elephant conservation

(2) It has been demonstrated that the activity provides good value for money

STET UK and STEP Tanzania maintain close contact with regards to implementation of activities. Each Board meets at a minimum twice per year.

Achievements and Performance

1. Supporting elephant protection in critical habitats

The goal of this programmatic area is to enhance protection efforts of rangers and village game scouts through support for ground and air patrols, provision of training and resources, and data optimization. Targeted support is provided to three protected areas selected for their importance to elephants, their biodiversity value, and funding and resource gaps assessed with respective wildlife management authorities. These include MBOMIPA Wildlife Management Area (WMA), a community-managed wildlife area; Uzungwa Scarp Nature Forest Reserve (USNFR), a forest reserve by Tanzania Forestry Services Agency (TFS); and Rungwa-Kizigo-Muhesi Game Reserves (RKM GR), managed by Tanzania Wildlife Management Authority (TAWA). The means by which we provide support include:

- Building the capacity of rangers and Village Game Scouts through training and equipment
- Supporting ground and air patrols
- Mapping and analysing patrol outcomes for strategic patrol planning

1.1 MBOMIPA Protection Project

STEP first began to work with the community-owned MBOMIPA Wildlife Management Area in 2018. In particular, Lunda Zone in MBOMIPA WMA is a critical part of the Ruaha-Rungwa ecosystem and especially important for elephants, as well as other endangered species such as wild dogs and lions. 2021 marked the fourth year of the fruitful collaboration between STEP and MBOMIPA WMA. Patrol support was expanded to cover the Tungamalenga and Kinyangesi zone and now covers 100% of the WMA. STEP supported three teams of Village Game Scouts (VGS) to conduct at least 21 days of foot patrols each per month by supplying scout wages and providing fuel and food supplies. In 2021, VGS covered 10,621 km of foot patrols and 11,067 km of vehicle patrols in the WMA. 100% of patrols were logged using GPS units, with patrol coverage and outcomes mapped every month and analysed by STEP to enhance patrol effectiveness. To facilitate the transfer to mobile data collection using the Survey123 application, STEP provided three Android Black View 9500 smartphones to VGS, as well as four GPS units. Also, in October 2021, STEP installed a radio communication system in MBOMIPA WMA and at the STEP offices. The radio communication has helped to reduce communication barriers among the patrol teams and vehicles as well as with the STEP office in all urgent matters. STEP also continued with maintenance and operation of a field vehicle for the WMA to enable monthly rotation of VGS and vehicle patrols. The WMA was supported with 3,960 litres of fuel.



Mobile data collection using the Survey123 app (left); MBOMIPA VGS on patrol (right)

1.2 Uzungwa Scarp Protection Project

Uzungwa Scarp Forest Nature Reserve (USFNR) is a biodiversity hotspot that is home Uzungwa endemics and globally threatened vertebrate species (Rovero et al. 2014) including Sanje mangabey, Udzungwa red colobus, Abbott's duiker, 20 endemic and 14 threatened reptiles (Lyakurwa et al. 2019), and 19 endemic and threatened amphibians. The Reserve also serves as a critical water catchment. USFNR has been under threat from anthropogenic activities (Harrison 2006) such as wildfire, logging, forest encroachment for agriculture, and illegal hunting (Topp-Jørgensen et al. 2009). Severe population declines have been documented for several threatened species, attributed to hunting and trapping (Rovero et al. 2015).

With support from and in collaboration with Wild Planet Trust (WPT, formerly Whitley Wildlife Conservation Trust), Bristol Chester Zoo, and Association Mazingira, STEP began supporting the protection of Uzungwa Scarp Nature Forest Reserve in late 2017. The Uzungwa Scarp Protection Project supports with funding of ground patrols, training of rangers, and provision of essential equipment. In 2021, STEP supported 19 mobile camping patrols, each lasting 5 days, by Village Scouts, rangers from Tanzania Forestry Services and Iringa Anti-Poaching Unit in Uzungwa Scarp Nature Forest Reserve. All patrols were strategically planned and executed, with mapping, analysis and reporting of findings subsequent to each patrol. Patrol teams covered 784 km, a >90% increase relative to 2020. These patrols resulted in the removal of 473 snares and closure of 19 timber cutting sites. STEP also conducted its first 'benefit audit' in an attempt to better understand the perceptions of the communities who live around USFNR with regards to the advantages that they see from the Protected Area.



VGS in USFNR

1.3 Rungwa-Kizigo-Muhesi Game Reserves

In 2021, the STEP pilot team covered 48.5 hours of both anti-poaching and rescue missions in the Rungwa-Kizigo-Muhesi Game Reserves. Nineteen flights were flown to points of interest supplied by the RKM management, covering 3,967 km of linear transects. Thirteen poacher camps and 18 timber cutting sites were identified from aerial patrols. Due to heavy rains, exchange of rangers from the Reserve headquarters to Makwasa Ranger post was challenging. Patrol vehicles could not reach the ranger post due to flooding of both the Makwasa and Nyasigogo Rivers. Game Reserve Management formally requested STEP to help support the four rangers who were at the Makwasa Ranger Post with supplies. The STEP pilot also helped to deploy four additional rangers to the Makwasa ranger post who stayed on duty for February 2021.

Furthermore, Rungwa-Kizigo-Muhesi Game Reserves rangers conducted 12,141 km of vehicle patrols with STEP fuel support, thereby helping to detect and respond to threats such as tree cutting, illegal mining, illegal grazing and bushmeat poaching.



Rungwa-Kizigo-Muhesi Game Reserves from the air during the wet season of 2021

1.4 Capacity building

As part of the Uzungwa Scarp Protection Project, STEP provided monthly technical support to USNFR's staff and VGS in collection, storage, analysis, mapping, and reporting of patrol data. This support helps USNFR management to plan patrols in a strategic manner and to produce monthly patrol reports and annual reports. STEP also facilitated two technical training workshops for 214 scouts (32% women) and 17 rangers from the villages around USNFR. Teams were trained in mobile data collection, camera trapping, human rights, and use of GPS to map patrols. STEP also trained 17 TFS staff (14% women) on the use of GPS, mobile data collection (Survey 123), camera trapping, chain of arrest, and human rights. The training aimed to equip foresters with new patrol data collection techniques and refresh their GPS skills, as well as review the chain of arrest procedures and Human Rights. STEP also donated tents, tarps, gumboots, sleeping pads, raincoats, uniforms, cooking utensils, and first aid kit contents to facilitate more effective patrols.

In MBOMIPA WMA, STEP facilitated four technical trainings for 40 VGS which covered deployment of camera traps, mobile data collection using Survey 123, radio communications and a refresher course on data collection on patrol.



TFS rangers during training

2. Enhancing human-elephant coexistence in communities living with elephants

The goal of this programmatic area is to enhance coexistence between people and elephants in communities living in and alongside elephant range. We support communities to coexist with elephants in two project areas, the Kilombero Valley in Morogoro region, and the western boundary of Rungwa-Kizigo-Muhesi Game Reserves in Singida region. These areas are hotspots of elephant impact, with regular movement of elephants onto village land and frequent crop damage. The means by which we build capacity for coexistence include:

- Supporting farmers to implement farm-based mitigation methods to reduce crop losses to elephants
- Conducting education and awareness-raising events in villages affected by human-elephant conflict to explain elephant behaviour, provide context for human-elephant interactions and provide advice on how to stay safe around elephants
- Collect data on elephant movements and use this to inform education and trials of crop protection measures
- Work with Village Governments to understand the drivers of HEC and work towards establishing Land Use Plans that facilitate human-elephant coexistence.
- Explore and support establishment of corridors to facilitate safe elephant movement
- Immersive hands-on training and development opportunities for students and early career conservationists from inside and outside of Tanzania, many of whom go on to work for other organisations

2.1 Kilombero Valley

The Kilombero Valley, in the Uzungwa-Selous ecosystem, is a densely populated, fertile matrix of villages, agriculture and grazing land. Elephants regularly attempt to cross the short distance of ~10km across the valley, between Uzungwa Mountains National Park and Magombera Forest Reserve on the edge of Nyerere National Park (formerly Selous Game Reserve). Less than 50 years ago, there was continuous forest across the valley: today, the forest has been fragmented by rapid land conversion due to agriculture. The route is a critical connection between the western and southern elephant metapopulations of Tanzania (over 30,000 individuals) and the only link that can be maintained and restored. Intensive agriculture in the valley has created a hard edge between forest and farmland, making farms vulnerable to elephant crop damage. The multi-faceted land use challenges of the Valley have informed STEP's approach to building human-elephant coexistence in the Kilombero Valley through limiting elephant movement into farmland and settlement through farm-based interventions, facilitating safe elephant movement through a designated wildlife corridor, and supporting income diversification and awareness-raising events.

2.1.1 Farm-based interventions, Village Savings and Loans Associations, and Awareness-Raising

To date, STEP has supported seven farmers groups (146 farmers) registered as Community-Based Organisations to establish seven beekeeping projects (6.8km of beehive fences) in the Kilombero Valley to protect agricultural fields from elephants. In addition to reducing elephant movement into farmland and settlement, beehive fences generate revenue for farmers' groups through the sale of honey. Economic resilience is an important factor in building human-elephant coexistence. If a household's economic resources are depleted by an incident of crop raiding by an elephant, it is unlikely that members of the household will be willing to tolerate the presence of that elephant. STEP continued to support its existing groups with field visits, in depth follow up and refresher training. STEP also supported four farmers groups with construction of beehive huts. The aim of these beehive huts is to capture bee colonies and increase honey yields for farmers' groups. The activity includes moving unoccupied hives from the beehive fence to the beehive hut and moving them back to the fence once they are occupied. STEP also continued to operate the Udzungwa Honey Collection Centre, of which all STEP beekeeping groups are members, to enable the processing and packaging of honey generated by beehive fences. More than 262 litres of honey was harvested in 2021. The honey was processed and packed at the Honey Collection Centre. Beekeeping groups also received training targeted at improving hive occupancy and optimizing occupancy to boost hive yields. Each group was also provided with 10 catch boxes as a new method for increasing beehive occupancy.

STEP also works with farmers' groups to establish Village Savings and Loan Associations (VSLAs), informal financial systems in which members have access to credit and financial assistance through weekly contributions. Members can take loans from VSLAs and have access to emergency financial relief. By increasing community and household resilience to human-wildlife conflict, VSLAs can contribute to increasing coexistence. In 2021, we supported the establishment of one new Village Savings and Loan Association and continued to support five existing VSLAs. 104 farmers participated in VSLAs and took out 112 loans with a value of TZS 13,996,000/- to build small businesses, improve their farming practices, pay school fees, and to support household cash needs (e.g. payments for medication, food). Such access to credit is highly valued by VLSA members in our project area. Prior to VSLAs, farmers' options for accessing credit either required travelling >50 km to a larger commercial centre and seeking a loan from a formal financial institution, or engaging in 'prospective' rice selling. If members of the VSLA wanted to access credit sizes similar to their total loan size from the VSLA, some would have had to part with six bags of rice or more, representing an enormous loss to future earnings and a significant blow to household food supplies. Therefore, the existence of the VSLA itself is impactful through creation of an alternative source of credit. In 2021, STEP began trialling a mobile app, CHOMOKA, to increase transparency and efficiency in VSLA record keeping. We plan to move 80% of VSLAs to CHOMOKA in 2022.

2.1.2 Awareness-Raising and Education

In 2021, STEP conducted film nights in 8 villages, reaching 2,213 adults and youth. We also distributed over 1000 copies of flyers containing information about human-elephant coexistence, methods to stay safe when you come across an elephant, benefits of elephants, the life of elephants, and mitigation strategies to reduce human-elephant conflict. STEP also taught a 3-module course on human-elephant coexistence in 11 primary schools and 3 secondary schools, reaching over 1,060 students. The modules covered 1) Elephant Behaviour, Ecology, and Biology 2) Human-Elephant Coexistence, and 3) Wildlife connectivity. STEP also distributed over 2000 booklets to students which contained valuable information about elephants and how to stay safe around elephants. STEP also began a small pilot bringing primary and secondary students to national parks as an experiential supplement to educational outreach. More than 50 students visited Udzungwa Mountains National Park, learned about elephant research and monitoring and had the opportunity to experience Tanzania's rich natural heritage.



Students on park visit to Udzungwa Mountains National Park

2.1.3 Corridor Restoration

2021 saw significant progress towards our long-term vision of restoring the Kilombero Elephant Corridor between the Udzungwa Mountains and Nyerere National Parks, via the Magombera Forest Nature Reserve. The goal is to peacefully manage the regular movements that elephants make across the Kilombero Valley, even though their once forested routes have been turned into farmland over the last 50 years. STEP has been facilitating this multi-stakeholder restoration project since 2018, involving communities, civil society, Government and the private sector to restore this ecological connectivity, and enhance food and personal security for the local farming population. At the heart of the corridor project are the communities of the three villages of Sole, Mang'ula A and Kanyenja, who have agreed to setting aside ~7% of the village land to enable the corridor. In early 2021, construction of Tanzania's first ever elephant underpass was completed on the Mikumi-Ifakara highway, and will be opened as soon as the corridor is demarcated. Unfortunately, this year, two elephants were killed by a train while they were crossing the railway that also passes through the corridor. Working towards an effective rail underpass is another challenge that we are facing and working on. In September, a major step forward was achieved when the Regional Commissioner of Morogoro inaugurated the Kilombero Elephant Corridor Management Committee. Chaired by the District Commissioner and comprising village and other community leaders, the Committee also has representatives of Tanzania National Parks, the National Land Use Planning Commission, and the Ministry of Natural Resources and Tourism. Throughout 2021, STEP continued the long-term work of building consensus with owners of the farm plots within the 1.81 km² corridor, as well as raising funds to ensure that each of these households who are giving up one or two acres of land are fairly compensated. By the end of the year, 270 farmers had agreed to their land being formally evaluated by the District Government Valuation Team and the final compensation amounts for each parcel were calculated. Following careful review and approval, compensation payments began in early 2022 and are moving rapidly ahead. STEP has invited all 270 households to financial training, and is also organising Village Savings and Loans Association groups for these 'corridor farmers' to further enhance their financial security in the long term. There are also plans, as requested by the farmers, for ongoing tailored trainings including on modern agricultural technologies and methods for improving yields.

2.2 Rungwa-Kizigo-Muhesi

Bordering Ruaha National Park to the north and west, Rungwa-Kizigo-Muhesi Game Reserves comprise 15,200 km² of wildlife habitat. Historically an elephant stronghold within East Africa, the area lost 60% of its elephants between 2009 and 2015 to poaching (Thouless et al. 2016). Between 2015 and 2018, the elephant population remained stable. However, human-elephant conflict is a rapidly emerging threat to elephants in the area. Human settlement along protected boundaries, in conjunction with a lack of land use planning, has led to more frequent human-elephant interactions. STEP works to mitigate human-elephant conflict in villages on the western edge of Rungwa Game Reserve through a combination of farm-based interventions, establishment of Village Savings and Loans Associations, and awareness-raising and education activities.

2.2.1 Farm-based interventions and Village Savings and Loans Associations

STEP started five new VSLAs in the sub-villages around Rungwa and Doroto, bringing the total number of VSLAs to eight. These are highly mobile and dynamic communities of agro-pastoralists. Across the eight groups, 175 members had access to 144 loans with a value of 29,232,500 TZS (~\$12,500.00). These loans supported establishment of small businesses and agricultural activities. STEP is trialling a mobile app, CHOMOKA, to increase transparency and efficiency in record keeping. Five of eight groups are currently using CHOMOKA.

In 2021, we continued to support the 46 farmers who had been given beehives in 2020 (20 in Rungwa and 26 in Doroto) with beekeeping. Each farmer was given three modern hives and provided with training on modern hives for beekeeping. In 2021, farmers who were given modern beehives by STEP harvested 350 litres of honey, a nine-fold increase when compared to 2020.



VLSA meeting in Doroto village

2.2.1 Awareness-Raising and Education

In 2021, we continued and expanded community outreach and education efforts. In partnership with TAWA and Itigi District Council, STEP conducted a workshop about human-elephant coexistence in May 2021 with 32 participants representing the local communities from 9 villages. The participants

came from areas experiencing frequent interactions between humans and elephants along the Rungwa-Kizigo-Muhesi Game Reserve boundary. The workshop aimed to equip participants with an accurate understanding of elephant population dynamics in Tanzania over the last fifty years and their relationship to human population growth in the country over the same period. The workshop also helped us learn which villages and sub-villages were priority areas for elephant monitoring and efforts to enhance human-elephant coexistence.

In collaboration with Tanzania Wildlife Management Authority and Itigi District Council, STEP's Human-Elephant Coexistence team hosted the third instalment of the *Tembo Cup* Football Tournament in November 2020 (Tembo is Swahili for elephant). The tournament involved villages experiencing human-elephant conflict adjacent to Rungwa-Kizigo-Muhesi Game Reserve. The coverage of the tournament was expanded to ten villages in two zones: Rungwa and Muhesi. The tournament aimed to raise awareness about human-elephant coexistence, the benefits of protected areas, and to create a positive association with elephants through an engaging community activity. During the tournament, 36 matches were played, which were attended by approximately 12,850 people. In addition to football matches, film nights, community training and training at schools were conducted. The training sessions focused on building a culture and norm of loving and respecting elephants, as well as on safety around elephants to handle potential encounters with elephants on foot on village land.

- Over 12,850 people attended football matches, and 300 people attended netball matches
- Over 3,700 students were trained at twenty primary schools and a secondary school
- Over 2,500 children were trained during football matches
- Over 4,500 people attended film nights at which Swahili-language wildlife films were shown
- Over 2,000 people assembled for community training held before or immediately following matches
- For the first time, the Tembo Cup hosted netball matches, a game played by women in Tanzania. Six teams participated and we hope more will join in 2022.



One of STEP's local elephant monitors conducting awareness-raising at the Tembo Cup football tournament



Women's netball team participating in the Tembo Cup netball tournament

2.3 Capacity building

In 2021, one Tanzanian student and two Tanzanian volunteers participated in human-elephant coexistence activities and learned fieldwork and community engagement methods.

STEP hosted nine members of a Rapid Response Task Force formed by the Tanzania Wildlife Management Agency (TAWA) and trained them on our beehive fence model. This unit will be called to support communities as they respond to human-wildlife conflict as part of Tanzania's National Human-Wildlife Conflict Strategy

In December 2021, STEP hosted 18 rangers from protected areas across southern Tanzania, representing TAWA, TANAPA and KDU. These rangers completed a two-week intensive bushwalking course where they learned the foundations of elephant behaviour and how elephants utilise their habitats. The rangers then applied this knowledge to training on a human-elephant conflict mitigation tool kit, developed by Honeyguide Foundation. Teams considered their operating environments, the types of situations in which they encounter human-elephant conflict and new ways to deter elephants, integrating their knowledge on animal behaviour. This multifaceted training helped to address central aspects of Tanzania's Human-Wildlife Conflict Strategy.



Rangers receiving HWC response training

To support more effective human-wildlife conflict response by protected area management agencies, STEP also provided almost 10,000 litres of fuel Rungwa-Kizigo-Muhesi Game Reserves, Uzungwa Mountains National Park, and Nyerere National Parks for HWC response.

Our trained village-based team (Local Elephant Monitors) continued with data collection and training for farmers. While surveying elephant activity, they visit and train farmers affected by elephant damage in their communities. In 2021, over 2,000 farmers were trained in two villages (Rungwa, and Doroto) by this team. The training focused on staying safe, measures to avoid or reduce human activities in areas preferred by wild animals, and ways to protect crops from elephants, such as improving food stores and using chilli.

3. Conducting elephant research to inform conservation efforts

The goal of this programmatic area is to collect and analyse data to inform the formulation of meaningful and sound conservation strategies, as well as to monitor the impact of our conservation work. The geographic focus of this program comprises the Ruaha-Rungwa and Uzungwa-Selous ecosystems. The main activities under this program include:

- Running a long-term elephant research project in Ruaha National Park to assess population status and to investigate tusklessness, ecology and behaviour
- Monitoring elephant distribution and status in the forests of the Uzungwa Mountains
- Monitoring wildlife corridors
- Assessing spatial and temporal trends in human-elephant interactions and evaluating solutions
- Collaboration and development opportunities for early career researchers from inside and outside of Tanzania

3.1 Monitoring elephants in the Ruaha-Rungwa ecosystem

The elephant monitoring program in Ruaha National Park under STEP's affiliated research project aims to collect long-term data on elephant population structure, tusklessness, distribution and behaviour. In 2021, the research team conducted intensive dry season fieldwork to enable a new demographic assessment for the Ruaha elephant population. The demographic assessment will describe the current age-and-sex structure of the population and will help us understand to what extent the Ruaha elephant population has begun to recover from the effects of the poaching crisis of 2009-2015. In 2021, we welcomed a new Tanzanian researcher, Loyce Majige, to the team. Loyce has a lifelong passion for conservation and elephants and joined STEP while completing her Master's in Conservation Management of African Ecosystems at the University of Glasgow, Scotland. Loyce was also part of the inaugural class of the Grumeti Fund's *Women in the Field Program*, a skills training initiative for Tanzanian women conservationists, and is a role model and source of guidance for other young women interested in a career in conservation.

3.2 Monitoring elephants in Uzungwa-Selous

A key objective of STEP's work in the Kilombero Valley is to support the recovery of the Uzungwa-Selous elephant population and to secure long-term connectivity for elephants between Uzungwa and Selous through restoration of the Kilombero Elephant Corridor, a historic corridor that spans the Kilombero Valley. To monitor our progress toward this objective, we monitor elephant presence and status in Mwanihana and Magombera forest, which form endpoints of the Kilombero Elephant Corridor, as well as elephant presence in the corridor area. We hope to see an increase in elephant use of the forest and corridor area over time as a result of our conservation efforts. In 2021, we continued monitoring of elephants in Mwanihana forest (first begun in 2015) and Magombera forest (begun in 2019) to collect data on elephant use of these forests through foot transects. Our monitoring suggests that elephant use of Mwanihana forest in Uzungwa has increased over the past six years – a positive indication that the forest is becoming safer for elephants.

3.3. Studying human-elephant interactions

To help plan and evaluate human-elephant coexistence strategies, we continued to monitor elephant activity and crop losses on village land. In 2021, we worked with 12 local elephant monitors (LEMs) across seven villages in the Rungwa-Doroto and Kilombero valley project areas. Each elephant monitor is provided with training and regular performance feedback, and a GPS unit. All data collection is done using KoboCollect. These data informed our work in a number of ways, including 1) to help us select locations for trials of novel elephant deterrents, 2) to assess baseline crop damage to elephants prior to restoration of the Kilombero Elephant Corridor; and 3) to evaluate trials of novel crop protection methods.



Local elephant monitors receiving training in KoboCollect, a mobile data collection app

3.4 Trialling farm-based interventions

Finding affordable and effective ways to protect farms from elephants is one way that we aim to enhance coexistence between people and elephants. STEP is seeking to expand its portfolio of crop protection measures through comprehensive trials of the effectiveness of smelly repellent (a foul-smelling fermented mixture) as an elephant deterrent. Our trials of smelly repellent fencing are the most extensive trials of this method to date, and our rigorous monitoring has given us a clear understanding of efficacy. We learned that the repellent deters elephants attempting to enter farmland more than half of the time, but also that there is a risk of elephants habituating to the repellent. Through interviews, we learned that farmers perceive the repellent to be effective and that there is a broad interest in using this method to protect their crops, but that the primary barrier to farmer uptake is cost; hence, future work will explore ways to lower costs. We presented the results of our smelly repellent trials at the Tanzania Wildlife Research Institute scientific conference and are pleased that our experience and approach have informed trials of smelly repellent fencing in Zambia and Kenya.



Elephant caught on camera trap at the smelly repellent trial fence

3.5 Capacity building

Master's student support

One of our goals is to build capacity for research in Tanzania and, in doing so, facilitate scientific studies that inform our elephant conservation work. To this end, we launched an initiative in 2021 to support Tanzanian Masters students in the conservation field. Through this initiative, we help students to design a research project and provide mentoring and training in data collection methods and data analysis, as well as provide a bursary to support their fieldwork. In 2021, we supported two students from the Sokoine University of Agriculture: Irene Laizer and Lowassa Moitiko. Irene is studying how people and elephants share water sources located on village land adjacent to Rungwa-Kizigo-Muhesi Game Reserves, and Lowassa is studying the age-and-sex structure and activity patterns of elephants at the forest-farm interface in the Kilombero Valley. Through this training opportunity, Irene and Lowassa have gained a valuable skill set and field experience that we hope will serve them well in their conservation journey. Their theses, which are expected in the second half of 2022, will also help inform STEP's conservation work. In 2021, STEP also continued a research collaboration with a student from the University of Newcastle, who completed her Masters' thesis using data from STEP's research data.



Master's student Irene Laizer conducting interviews

Training on human-wildlife interactions

A first step towards managing human-wildlife conflicts is to assess human-wildlife interactions, including developing a better understanding of wildlife impacts and animal behaviour. To better equip practitioners to conduct such assessments, STEP and the Polish Mammal Research Institute facilitated training on methods for assessing human-wildlife interactions, with a special focus on mobile data collection, the use of GIS, and camera traps, as well as their applications to monitoring of human-wildlife interactions. The training was attended by 15 practitioners from a range of institutions, including Tanzania National Parks, Tanzania Wildlife Management Authority, academic institutions, District Government and NGOs. As well as learning a range of new technical skills, participants discussed how to apply what they had learned in each of their daily roles.



Participants learn GIS skills to help them assess human-wildlife conflict hotspots

References

- Harrison, P. (2006). Socio-economic study of forest-adjacent communities from Nyanganje forest to Uzungwa Scarp: a potential wildlife corridor. *Incorporating livelihood assessments and options for future management of Uzungwa forests*. World Wide Fund (WWF) for Nature, Dar es Salaam.
- Jones, T., Cusack, J.J., Pozo, R.A., Smit, J., Mkuburo, L., Baran, P., Lobora, A.L., Mduma, S. and Foley, C., 2018. Age structure as an indicator of poaching pressure: Insights from rapid assessments of elephant populations across space and time. *Ecological Indicators*, 88, pp.115–125.
- King, L.E., Douglas-Hamilton, I. and F. Vollrath (2011). Beehive fences as effective deterrents for crop-raiding elephants: field trials in northern Kenya. *African Journal of Ecology* 49: 431-439.
- Lyakurwa, J. V., Howell, K. M., Munishi, L., & Treydte, A. C. (2019). Uzungwa Scarp Nature Forest Reserve: a unique hotspot for reptiles in Tanzania.
- Rovero, F., Menegon, M., FjeldsAa, J., Collett, L., Doggart, N., Leonard, C., ... & Burgess, N. D. (2014). Targeted vertebrate surveys enhance the faunal importance and improve explanatory models within the Eastern Arc Mountains of Kenya and Tanzania. *Diversity and Distributions*, 20(12), 1438-1449.

Rovero, F., Mtui, A., Kitegile, A., Jacob, P., Araldi, A., & Tenan, S. (2015). Primates decline rapidly in unprotected forests: evidence from a monitoring program with data constraints. *PLoS One*, 10(2), e0118330.

Thouless, C., Dublin, H. T., Blanc, J. J., Skinner, D. P., Daniel, T. E., Taylor, R. D., ... & Bouché, P. (2016). African elephant status report 2016. *Occasional Paper Series of the IUCN Species Survival Commission*, 60.

Topp-Jørgensen, E., Nielsen, M. R., Marshall, A. R., & Pedersen, U. (2009). Relative densities of mammals in response to different levels of bushmeat hunting in the Uzungwa Mountains, Tanzania. *Tropical Conservation Science*, 2(1), 70-87.

Scheijen, C. P., Richards, S. A., Smit, J., Jones, T., & Nowak, K. (2019). Efficacy of beehive fences as barriers to African elephants: a case study in Tanzania. *Oryx*, 53(1), 92-99

Policy on Reserves

The Charity operates with limited cash reserves. The Trustees' objective is to maintain a sufficient balance to meet committed expenditure on current projects and cover foreseeable administration expenses.

Financial Review

The accounts are provided as a separate document.

Approved by the trustees on 23.10.2022 and signed on their behalf by:

Helen Pearson

A rectangular box containing a handwritten signature in black ink, which appears to read 'Helen Pearson'.

Dated: 23.10.2022

SOUTHERN TANZANIA ELEPHANT TRUST

Charity registration number 1179460

**FINANCIAL STATEMENTS
FOR THE PERIOD ENDED 31 DECEMBER 2021**

SOUTHERN TANZANIA ELEPHANT TRUST

CONTENTS FOR THE PERIOD ENDED 31 DECEMBER 2021

	Page
Legal and Admin Information	1
Independent examiner's report	2
Receipts and payments account	3
Statement of assets & liabilities	4
Notes to the financial statements	5

SOUTHERN TANZANIA ELEPHANT TRUST

LEGAL & ADMIN INFORMATION FOR THE PERIOD ENDED 31 DECEMBER 2021

Status

The trust was formed as an incorporated charity on 1st August 2018.

Trustees

Nicholas McWilliam
Helen Pearson
Nat Comber

Charity number

1179460

Independent Examiner

Community360
Winsley's House
High Street
Colchester
CO1 1UG

Business address

30 Barn Road
Stirling
FK8 1EP

Bankers

Natwest
Cleveleys Branch
Lancs
FY5 2AL

SOUTHERN TANZANIA ELEPHANT TRUST

INDEPENDENT EXAMINER'S REPORT FOR THE YEAR ENDED 31 DECEMBER 2021

I report on the accounts of Southern Tanzania Elephant Trust for the year ended 31st December 2021 which are set out on pages 3 to 5.

Respective responsibilities of trustees and examiner

The Charity's Trustees are responsible for the preparation of the accounts. The Charity's Trustees consider that an audit is not required for this year (under section 144 (2) of the Charities Act 2011 (The Act) but that an independent examination is needed.

It is my responsibility to:

- Examine the accounts under section 145 of the Charities Act,
- To follow the procedures laid down in the General Directions given by the Charity Commissioners (under section 145(5)(b) of the Charities Act, and
- To state whether particular matters have come to my attention.

Basis of independent examiner's Statement

My examination was carried out in accordance with the General Directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the Charity and a comparison of the accounts presented with those records. It also includes considerations of any unusual items or disclosures in the accounts, and seeking explanations from you as trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit and consequently I do not express an audit opinion on the view given by the accounts.

Independent examiner's statement

In the course of my examination, no material matters have come to my attention which gives me cause to believe that in, any material respect:

- the accounting records were not kept in accordance with section 130 of the Charities Act; or
- the accounts did not accord with the accounting records; or
- the accounts did not comply with the applicable requirements concerning the form and content of the accounts set out in the Charities (Accounts and Reports) Regulations 2008 other than any requirement that the accounts give a true and fair' view which is not a matter considered as part of an independent examination.

I have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Shelley-Marie Rudling FMAAT AATQB for and on behalf of:

Community360

Winsley's House, High Street, Colchester, Essex



Date 31.10.2022

SOUTHERN TANZANIA ELEPHANT TRUST

RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD ENDED 31 DECEMBER 2021

	Notes	Unrestricted Fund £	Restricted Fund £	2021 Total £	2020 Total £
Receipts					
Donations, legacies and other similar receipts	2	4,993	42,036	47,029	59,399
Total receipts		<u>4,993</u>	<u>42,036</u>	<u>47,029</u>	<u>59,399</u>
Charitable payments					
Charitable activities	3	3,277	45,294	48,571	8,668
Governance		400	-	400	-
Total payments		<u>3,677</u>	<u>45,294</u>	<u>48,971</u>	<u>8,668</u>
Net of receipts/(payments)		<u>1,316</u>	<u>(3,258)</u>	<u>(1,942)</u>	<u>50,731</u>
Cash funds as at 1 December 2020		1,009	94,696	95,705	44,974
Cash funds as at 31 December 2021	4	<u><u>2,325</u></u>	<u><u>91,438</u></u>	<u><u>93,763</u></u>	<u><u>95,705</u></u>

Notes on pages 5 form part of these accounts

SOUTHERN TANZANIA ELEPHANT TRUST

STATEMENT OF ASSET AND LIABILITIES AS AT 31 DECEMBER 2021

	Notes	2021 £	2020 £
<u>Monetary assets</u>			
Cash at bank and in hand:		93,763	95,705
Total monetary assets		93,763	95,705
<u>Funds</u>			
Unrestricted	4	2,325	1,009
Restricted	4	91,438	94,696
Total Funds		93,763	95,705
<u>Other monetary assets</u>			
<u>Liabilities</u>			
Independent examiner fee	5	400	400
		400	400

These accounts were approved by the Trustees and signed on their behalf by :

Signed: 

Date: 30/10/2022

Helen Pearson

SOUTHERN TANZANIA ELEPHANT TRUST

NOTES TO THE ACCOUNTS FOR THE PERIOD ENDED 31 DECEMBER 2021

- The financial statements have been prepared in accordance with Accounting and Reporting by Charities: Statement on Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019)- (Charities SORP (FRS 102)), the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) and the Companies Act 2006.

The accounts are prepared under receipts and payments basis.

Period

These accounts cover a 12 month period from 1st January 2021 to 31st December 2021.

2. Donations, legacies and other similar receipts		Unrestricted Fund	Restricted Fund	2021 Total	2020 Total
		£	£	£	£
Donations		4,993	42,036	47,029	59,399
		4,993	42,036	47,029	55,444
3. Charitable activities		Unrestricted Fund	Restricted Fund	2021 Total	2020 Total
		£	£	£	£
Insurance		247	-	247	268
Self employed		3,010	1,190	4,200	8,400
Donation		-	44,104	44,104	-
Bank charges		20	-	20	-
		3,277	45,294	48,571	8,668
4. Cash Funds	Balance at 01/01/21	Incoming	Outgoing	Transfers	Balance at 31/12/21
	£	£	£	£	£
Unrestricted					
General fund	1,009	4,993	(3,677)	-	2,325
	1,009	4,993	(3,677)	-	2,325
Restricted Funds					
Wild Planet Trust	44,720	17,000	(30,139)	-	31,582
Bristol Chester Zoo	9,525	-	(4,875)	-	4,650
Association Mazingira	19,834	-	(10,280)	-	9,554
MBOMIPA Protection Project	3,534	20,000	-	-	23,534
Corridor restoration	17,083	-	-	-	17,083
Pro Wildlife	-	5,036	-	-	5,036
Totals	94,696	42,036	(45,294)	-	91,439

- The Independent Examiners Fee will be £400.00.
- No remuneration was paid to any trustee or to any person(s) known to be connected with any of them.
- There were no related parties within the year.
- The charity is operating on a going concern basis.
- During the year, there were Nil employees (2020: Nil).

Charity number: 1179460



Southern Tanzania Elephant Trust
Annual Report and Accounts for the Year ended
31st December 2021

Charity Name: Southern Tanzania Elephant Trust

Registered Charity Number: 1179460

Principal Address:

30 Barn Road
Stirling
FK8 1EP
United Kingdom

Trustees Report for the year ended 31st December 2021

Southern Tanzania Elephant Trust present their annual report and audited accounts for the period 1st January 2021 through 31 December 2021 and confirm they comply with the requirements of the Charities Act 2011, the Trust Deed and the Charities SORP (FRS 102).

Charity Trustees

Helen Pearson
Nathaniel Comber
Nick McWilliam

Names and Addresses of Independent Examiner

Shelley Rudling (FMAAT AATQB)
Community 360,
Winsleys House, High Street, Colchester, CO1 1UG

Governing document

The Charity was registered as a Trust on the 6th August 2018 and is governed by a Trust Deed dated 1st August 2018.

Trustee selection method

The first Trustees of the Charity were appointed for a term of three years at the time of registering the Charity. The Trustees were reappointed for another three-year term on 21st July 2021. The current trustees may appoint new trustees by approaching individuals whom the trustees believe would bring necessary skills, knowledge, and experience to the Organization. If the individual is willing to put themselves forward, their appointment is put to the current Trustees for approval.

Objects of the Charity

The objects of the charity are to conserve and protect the African elephant in Tanzania and other African wildlife and habitats in Tanzania for the public benefit.

The trustees identified Southern Tanzania Elephant (STEP) in Tanzania as the organisation whose work the Trust is aiming to support, in accordance with the Trusts' objects, to facilitate the delivery of the UK Charity's objectives.

Vision

Creating a long and peaceful future for elephants in southern Tanzania and for the ecosystems and communities on which they inter-depend.

Mission

To secure a future for elephants in southern Tanzania by, directly and through partnerships, supporting elephant protection, enhancing coexistence between communities and elephants, strengthening community livelihoods, conducting research and monitoring, and awareness-raising.

Principal Activities

Southern Tanzania is a globally important region for elephant conservation, with elephant populations numbering some 30,000 individuals in 2015, and approximately 70,000 in 2009 before devastating declines from poaching for the ivory trade (Thouless et al. 2016). The region holds 35% of East Africa's elephants, and 7% of Africa's elephants (Thouless et al. 2016). The Ruaha-Rungwa and Udzungwa-Selous ecosystems of southern Tanzania are some of the few elephant strongholds and wilderness areas for large mammals left in the world. The ecosystems and elephant populations of southern Tanzania are a global treasure, requiring global support for their conservation. Elephant conservation in the region faces two main challenges:

Securing elephant populations and habitat: The combined efforts of the Tanzanian government, civil society and international community have greatly reduced the threat of poaching to elephants compared to previous years. However, ongoing protection efforts are needed to secure these important gains and ensure long-term recovery of southern Tanzania's elephant populations. In addition, protecting the integrity of the ecosystems that comprise elephant range is vital to the long-term survival of the elephant populations of this region.

Human-elephant coexistence: Farms and settlements adjacent to protected areas and in elephant corridors and dispersal areas are at risk of elephant damage, as some elephants learn to use crops as a 'high-risk, high-reward' food source. As more land comes under cultivation, elephant habitat and corridors outside of protected areas are also increasingly at risk. Every year people are killed by elephants, often as a result of accidental encounters. This is a complex challenge that requires long-term vision and a multi-faceted approach.

We work to conserve the elephant metapopulation of southern Tanzania through a landscape level approach. The charity's principal activities include:

1. **Supporting elephant protection in critical habitats:** supporting ground and air patrols and providing technical support to under-resourced protected areas in important elephant range, as well as building ranger capacity to map and analyse patrols and outcomes and monitor spatial and temporal trends in illegal activities
2. **Enhancing human-elephant coexistence in communities living with elephants:** working with farmers' groups to protect farms and improve livelihoods through beehive fence projects which deter elephants from farmland and produce elephant-friendly honey; trialling novel crop protection strategies with farmers; providing farmers with access to financial services and improving household resilience through membership and training in Village Savings and Loans Associations; restoration of a critical wildlife corridor between the Udzungwa and Selous ecosystems; and awareness-raising and education activities.
3. **Conducting elephant research to inform conservation efforts:** monitoring elephants in the Ruaha-Rungwa and Udzungwa-Selous ecosystem; assessing spatial and temporal trends in human-elephant interactions and evaluating solutions; and monitoring of wildlife corridors.

Impact for the Year End 31st December 2021

The main activities during the year were increasing protection for elephants through support to wildlife rangers (Section 1), increasing community capacity for human-elephant coexistence through farm-based interventions, supporting farmer livelihoods activities, education and awareness-raising, and corridor restoration (Section 2), and research and monitoring of elephants and human-elephant interactions (Section 3). Capacity building was carried out in a number of ways through these activities.

All activities in Tanzania are carried out by our affiliate organisation in Tanzania, Southern Tanzania Elephant (abbreviated and referred to from here on as STEP), a non-governmental organisation registered on 17th July 2019 under the Non-Governmental Organisation (NGO) Act, 2002 Section 12(2) of Act No. 24 of 2002, with registration number I-NGO/R2/00077. The Tanzanian affiliate Organisation was previously registered as a company limited by guarantee having no share capital (i.e., a not-for-profit company). With the passing of The Written Laws (Miscellaneous Amendments) (No.3) Act, 2019 on 30th June 2019, all companies limited by guarantee having no share capital were required to register under the Non-Governmental Organisation (NGO) Act, 2002 by August 30th 2019.

The Board of Trustees of Southern Tanzania Elephant Trust in the UK (from here on referred to as STET UK) and the Board of STEP Tanzania are responsible for overall management of the organisation, including setting and reviewing strategic plans and budgets, financial matters, reviewing the performance of management, and ensuring adherence to internal control policies and sound governance. and for compliance with sound governance principles. The organisation is committed to the principles of effective governance, integrity, transparency and accountability. STET UK and STEP Tanzania agree on the yearly strategy and budget together. The Trustees of STET UK exercise their discretion when selecting which activities to support by having regard to the Charity Commission's public benefit guidance as well as the following internal criteria:

1) The activity contributes to the conservation of the African elephant in Tanzania through any of the following:

- a. Increasing resources and/or capacity for law enforcement of elephant range
- b. Increasing public awareness of the value of elephants and elephant conservation
- c. Increasing the capacity of rural communities to coexist with elephants
- d. Improving the welfare of rural communities who coexist with elephants
- e. Increasing the availability of research and scientific outputs to inform elephant conservation

(2) It has been demonstrated that the activity provides good value for money

STET UK and STEP Tanzania maintain close contact with regards to implementation of activities. Each Board meets at a minimum twice per year.

Achievements and Performance

1. Supporting elephant protection in critical habitats

The goal of this programmatic area is to enhance protection efforts of rangers and village game scouts through support for ground and air patrols, provision of training and resources, and data optimization. Targeted support is provided to three protected areas selected for their importance to elephants, their biodiversity value, and funding and resource gaps assessed with respective wildlife management authorities. These include MBOMIPA Wildlife Management Area (WMA), a community-managed wildlife area; Uzungwa Scarp Nature Forest Reserve (USNFR), a forest reserve by Tanzania Forestry Services Agency (TFS); and Rungwa-Kizigo-Muhesi Game Reserves (RKM GR), managed by Tanzania Wildlife Management Authority (TAWA). The means by which we provide support include:

- Building the capacity of rangers and Village Game Scouts through training and equipment
- Supporting ground and air patrols
- Mapping and analysing patrol outcomes for strategic patrol planning

1.1 MBOMIPA Protection Project

STEP first began to work with the community-owned MBOMIPA Wildlife Management Area in 2018. In particular, Lunda Zone in MBOMIPA WMA is a critical part of the Ruaha-Rungwa ecosystem and especially important for elephants, as well as other endangered species such as wild dogs and lions. 2021 marked the fourth year of the fruitful collaboration between STEP and MBOMIPA WMA. Patrol support was expanded to cover the Tungamalenga and Kinyangesi zone and now covers 100% of the WMA. STEP supported three teams of Village Game Scouts (VGS) to conduct at least 21 days of foot patrols each per month by supplying scout wages and providing fuel and food supplies. In 2021, VGS covered 10,621 km of foot patrols and 11,067 km of vehicle patrols in the WMA. 100% of patrols were logged using GPS units, with patrol coverage and outcomes mapped every month and analysed by STEP to enhance patrol effectiveness. To facilitate the transfer to mobile data collection using the Survey123 application, STEP provided three Android Black View 9500 smartphones to VGS, as well as four GPS units. Also, in October 2021, STEP installed a radio communication system in MBOMIPA WMA and at the STEP offices. The radio communication has helped to reduce communication barriers among the patrol teams and vehicles as well as with the STEP office in all urgent matters. STEP also continued with maintenance and operation of a field vehicle for the WMA to enable monthly rotation of VGS and vehicle patrols. The WMA was supported with 3,960 litres of fuel.



Mobile data collection using the Survey123 app (left); MBOMIPA VGS on patrol (right)

1.2 Uzungwa Scarp Protection Project

Uzungwa Scarp Forest Nature Reserve (USFNR) is a biodiversity hotspot that is home Uzungwa endemics and globally threatened vertebrate species (Rovero et al. 2014) including Sanje mangabey, Udzungwa red colobus, Abbott's duiker, 20 endemic and 14 threatened reptiles (Lyakurwa et al. 2019), and 19 endemic and threatened amphibians. The Reserve also serves as a critical water catchment. USFNR has been under threat from anthropogenic activities (Harrison 2006) such as wildfire, logging, forest encroachment for agriculture, and illegal hunting (Topp-Jørgensen et al. 2009). Severe population declines have been documented for several threatened species, attributed to hunting and trapping (Rovero et al. 2015).

With support from and in collaboration with Wild Planet Trust (WPT, formerly Whitley Wildlife Conservation Trust), Bristol Chester Zoo, and Association Mazingira, STEP began supporting the protection of Uzungwa Scarp Nature Forest Reserve in late 2017. The Uzungwa Scarp Protection Project supports with funding of ground patrols, training of rangers, and provision of essential equipment. In 2021, STEP supported 19 mobile camping patrols, each lasting 5 days, by Village Scouts, rangers from Tanzania Forestry Services and Iringa Anti-Poaching Unit in Uzungwa Scarp Nature Forest Reserve. All patrols were strategically planned and executed, with mapping, analysis and reporting of findings subsequent to each patrol. Patrol teams covered 784 km, a >90% increase relative to 2020. These patrols resulted in the removal of 473 snares and closure of 19 timber cutting sites. STEP also conducted its first 'benefit audit' in an attempt to better understand the perceptions of the communities who live around USFNR with regards to the advantages that they see from the Protected Area.



VGS in USFNR

1.3 Rungwa-Kizigo-Muhesi Game Reserves

In 2021, the STEP pilot team covered 48.5 hours of both anti-poaching and rescue missions in the Rungwa-Kizigo-Muhesi Game Reserves. Nineteen flights were flown to points of interest supplied by the RKM management, covering 3,967 km of linear transects. Thirteen poacher camps and 18 timber cutting sites were identified from aerial patrols. Due to heavy rains, exchange of rangers from the Reserve headquarters to Makwasa Ranger post was challenging. Patrol vehicles could not reach the ranger post due to flooding of both the Makwasa and Nyasigogo Rivers. Game Reserve Management formally requested STEP to help support the four rangers who were at the Makwasa Ranger Post with supplies. The STEP pilot also helped to deploy four additional rangers to the Makwasa ranger post who stayed on duty for February 2021.

Furthermore, Rungwa-Kizigo-Muhesi Game Reserves rangers conducted 12,141 km of vehicle patrols with STEP fuel support, thereby helping to detect and respond to threats such as tree cutting, illegal mining, illegal grazing and bushmeat poaching.



Rungwa-Kizigo-Muhesi Game Reserves from the air during the wet season of 2021

1.4 Capacity building

As part of the Uzungwa Scarp Protection Project, STEP provided monthly technical support to USNFR's staff and VGS in collection, storage, analysis, mapping, and reporting of patrol data. This support helps USNFR management to plan patrols in a strategic manner and to produce monthly patrol reports and annual reports. STEP also facilitated two technical training workshops for 214 scouts (32% women) and 17 rangers from the villages around USNFR. Teams were trained in mobile data collection, camera trapping, human rights, and use of GPS to map patrols. STEP also trained 17 TFS staff (14% women) on the use of GPS, mobile data collection (Survey 123), camera trapping, chain of arrest, and human rights. The training aimed to equip foresters with new patrol data collection techniques and refresh their GPS skills, as well as review the chain of arrest procedures and Human Rights. STEP also donated tents, tarps, gumboots, sleeping pads, raincoats, uniforms, cooking utensils, and first aid kit contents to facilitate more effective patrols.

In MBOMIPA WMA, STEP facilitated four technical trainings for 40 VGS which covered deployment of camera traps, mobile data collection using Survey 123, radio communications and a refresher course on data collection on patrol.



TFS rangers during training

2. Enhancing human-elephant coexistence in communities living with elephants

The goal of this programmatic area is to enhance coexistence between people and elephants in communities living in and alongside elephant range. We support communities to coexist with elephants in two project areas, the Kilombero Valley in Morogoro region, and the western boundary of Rungwa-Kizigo-Muhesi Game Reserves in Singida region. These areas are hotspots of elephant impact, with regular movement of elephants onto village land and frequent crop damage. The means by which we build capacity for coexistence include:

- Supporting farmers to implement farm-based mitigation methods to reduce crop losses to elephants
- Conducting education and awareness-raising events in villages affected by human-elephant conflict to explain elephant behaviour, provide context for human-elephant interactions and provide advice on how to stay safe around elephants
- Collect data on elephant movements and use this to inform education and trials of crop protection measures
- Work with Village Governments to understand the drivers of HEC and work towards establishing Land Use Plans that facilitate human-elephant coexistence.
- Explore and support establishment of corridors to facilitate safe elephant movement
- Immersive hands-on training and development opportunities for students and early career conservationists from inside and outside of Tanzania, many of whom go on to work for other organisations

2.1 Kilombero Valley

The Kilombero Valley, in the Uzungwa-Selous ecosystem, is a densely populated, fertile matrix of villages, agriculture and grazing land. Elephants regularly attempt to cross the short distance of ~10km across the valley, between Uzungwa Mountains National Park and Magombera Forest Reserve on the edge of Nyerere National Park (formerly Selous Game Reserve). Less than 50 years ago, there was continuous forest across the valley: today, the forest has been fragmented by rapid land conversion due to agriculture. The route is a critical connection between the western and southern elephant metapopulations of Tanzania (over 30,000 individuals) and the only link that can be maintained and restored. Intensive agriculture in the valley has created a hard edge between forest and farmland, making farms vulnerable to elephant crop damage. The multi-faceted land use challenges of the Valley have informed STEP's approach to building human-elephant coexistence in the Kilombero Valley through limiting elephant movement into farmland and settlement through farm-based interventions, facilitating safe elephant movement through a designated wildlife corridor, and supporting income diversification and awareness-raising events.

2.1.1 Farm-based interventions, Village Savings and Loans Associations, and Awareness-Raising

To date, STEP has supported seven farmers groups (146 farmers) registered as Community-Based Organisations to establish seven beekeeping projects (6.8km of beehive fences) in the Kilombero Valley to protect agricultural fields from elephants. In addition to reducing elephant movement into farmland and settlement, beehive fences generate revenue for farmers' groups through the sale of honey. Economic resilience is an important factor in building human-elephant coexistence. If a household's economic resources are depleted by an incident of crop raiding by an elephant, it is unlikely that members of the household will be willing to tolerate the presence of that elephant. STEP continued to support its existing groups with field visits, in depth follow up and refresher training. STEP also supported four farmers groups with construction of beehive huts. The aim of these beehive huts is to capture bee colonies and increase honey yields for farmers' groups. The activity includes moving unoccupied hives from the beehive fence to the beehive hut and moving them back to the fence once they are occupied. STEP also continued to operate the Udzungwa Honey Collection Centre, of which all STEP beekeeping groups are members, to enable the processing and packaging of honey generated by beehive fences. More than 262 litres of honey was harvested in 2021. The honey was processed and packed at the Honey Collection Centre. Beekeeping groups also received training targeted at improving hive occupancy and optimizing occupancy to boost hive yields. Each group was also provided with 10 catch boxes as a new method for increasing beehive occupancy.

STEP also works with farmers' groups to establish Village Savings and Loan Associations (VSLAs), informal financial systems in which members have access to credit and financial assistance through weekly contributions. Members can take loans from VSLAs and have access to emergency financial relief. By increasing community and household resilience to human-wildlife conflict, VSLAs can contribute to increasing coexistence. In 2021, we supported the establishment of one new Village Savings and Loan Association and continued to support five existing VSLAs. 104 farmers participated in VSLAs and took out 112 loans with a value of TZS 13,996,000/- to build small businesses, improve their farming practices, pay school fees, and to support household cash needs (e.g. payments for medication, food). Such access to credit is highly valued by VSLA members in our project area. Prior to VSLAs, farmers' options for accessing credit either required travelling >50 km to a larger commercial centre and seeking a loan from a formal financial institution, or engaging in 'prospective' rice selling. If members of the VSLA wanted to access credit sizes similar to their total loan size from the VSLA, some would have had to part with six bags of rice or more, representing an enormous loss to future earnings and a significant blow to household food supplies. Therefore, the existence of the VSLA itself is impactful through creation of an alternative source of credit. In 2021, STEP began trialling a mobile app, CHOMOKA, to increase transparency and efficiency in VSLA record keeping. We plan to move 80% of VSLAs to CHOMOKA in 2022.

2.1.2 Awareness-Raising and Education

In 2021, STEP conducted film nights in 8 villages, reaching 2,213 adults and youth. We also distributed over 1000 copies of flyers containing information about human-elephant coexistence, methods to stay safe when you come across an elephant, benefits of elephants, the life of elephants, and mitigation strategies to reduce human-elephant conflict. STEP also taught a 3-module course on human-elephant coexistence in 11 primary schools and 3 secondary schools, reaching over 1,060 students. The modules covered 1) Elephant Behaviour, Ecology, and Biology 2) Human-Elephant Coexistence, and 3) Wildlife connectivity. STEP also distributed over 2000 booklets to students which contained valuable information about elephants and how to stay safe around elephants. STEP also began a small pilot bringing primary and secondary students to national parks as an experiential supplement to educational outreach. More than 50 students visited Udzungwa Mountains National Park, learned about elephant research and monitoring and had the opportunity to experience Tanzania's rich natural heritage.



Students on park visit to Udzungwa Mountains National Park

2.1.3 Corridor Restoration

2021 saw significant progress towards our long-term vision of restoring the Kilombero Elephant Corridor between the Udzungwa Mountains and Nyerere National Parks, via the Magombera Forest Nature Reserve. The goal is to peacefully manage the regular movements that elephants make across the Kilombero Valley, even though their once forested routes have been turned into farmland over the last 50 years. STEP has been facilitating this multi-stakeholder restoration project since 2018, involving communities, civil society, Government and the private sector to restore this ecological connectivity, and enhance food and personal security for the local farming population. At the heart of the corridor project are the communities of the three villages of Sole, Mang'ula A and Kanyenja, who have agreed to setting aside ~7% of the village land to enable the corridor. In early 2021, construction of Tanzania's first ever elephant underpass was completed on the Mikumi-Ifakara highway, and will be opened as soon as the corridor is demarcated. Unfortunately, this year, two elephants were killed by a train while they were crossing the railway that also passes through the corridor. Working towards an effective rail underpass is another challenge that we are facing and working on. In September, a major step forward was achieved when the Regional Commissioner of Morogoro inaugurated the Kilombero Elephant Corridor Management Committee. Chaired by the District Commissioner and comprising village and other community leaders, the Committee also has representatives of Tanzania National Parks, the National Land Use Planning Commission, and the Ministry of Natural Resources and Tourism. Throughout 2021, STEP continued the long-term work of building consensus with owners of the farm plots within the 1.81 km² corridor, as well as raising funds to ensure that each of these households who are giving up one or two acres of land are fairly compensated. By the end of the year, 270 farmers had agreed to their land being formally evaluated by the District Government Valuation Team and the final compensation amounts for each parcel were calculated. Following careful review and approval, compensation payments began in early 2022 and are moving rapidly ahead. STEP has invited all 270 households to financial training, and is also organising Village Savings and Loans Association groups for these 'corridor farmers' to further enhance their financial security in the long term. There are also plans, as requested by the farmers, for ongoing tailored trainings including on modern agricultural technologies and methods for improving yields.

2.2 Rungwa-Kizigo-Muhesi

Bordering Ruaha National Park to the north and west, Rungwa-Kizigo-Muhesi Game Reserves comprise 15,200 km² of wildlife habitat. Historically an elephant stronghold within East Africa, the area lost 60% of its elephants between 2009 and 2015 to poaching (Thouless et al. 2016). Between 2015 and 2018, the elephant population remained stable. However, human-elephant conflict is a rapidly emerging threat to elephants in the area. Human settlement along protected boundaries, in conjunction with a lack of land use planning, has led to more frequent human-elephant interactions. STEP works to mitigate human-elephant conflict in villages on the western edge of Rungwa Game Reserve through a combination of farm-based interventions, establishment of Village Savings and Loans Associations, and awareness-raising and education activities.

2.2.1 Farm-based interventions and Village Savings and Loans Associations

STEP started five new VSLAs in the sub-villages around Rungwa and Doroto, bringing the total number of VSLAs to eight. These are highly mobile and dynamic communities of agro-pastoralists. Across the eight groups, 175 members had access to 144 loans with a value of 29,232,500 TZS (~\$12,500.00). These loans supported establishment of small businesses and agricultural activities. STEP is trialling a mobile app, CHOMOKA, to increase transparency and efficiency in record keeping. Five of eight groups are currently using CHOMOKA.

In 2021, we continued to support the 46 farmers who had been given beehives in 2020 (20 in Rungwa and 26 in Doroto) with beekeeping. Each farmer was given three modern hives and provided with training on modern hives for beekeeping. In 2021, farmers who were given modern beehives by STEP harvested 350 litres of honey, a nine-fold increase when compared to 2020.



VLSA meeting in Doroto village

2.2.1 Awareness-Raising and Education

In 2021, we continued and expanded community outreach and education efforts. In partnership with TAWA and Itigi District Council, STEP conducted a workshop about human-elephant coexistence in May 2021 with 32 participants representing the local communities from 9 villages. The participants

came from areas experiencing frequent interactions between humans and elephants along the Rungwa-Kizigo-Muhesi Game Reserve boundary. The workshop aimed to equip participants with an accurate understanding of elephant population dynamics in Tanzania over the last fifty years and their relationship to human population growth in the country over the same period. The workshop also helped us learn which villages and sub-villages were priority areas for elephant monitoring and efforts to enhance human-elephant coexistence.

In collaboration with Tanzania Wildlife Management Authority and Itigi District Council, STEP's Human-Elephant Coexistence team hosted the third instalment of the *Tembo Cup* Football Tournament in November 2020 (Tembo is Swahili for elephant). The tournament involved villages experiencing human-elephant conflict adjacent to Rungwa-Kizigo-Muhesi Game Reserve. The coverage of the tournament was expanded to ten villages in two zones: Rungwa and Muhesi. The tournament aimed to raise awareness about human-elephant coexistence, the benefits of protected areas, and to create a positive association with elephants through an engaging community activity. During the tournament, 36 matches were played, which were attended by approximately 12,850 people. In addition to football matches, film nights, community training and training at schools were conducted. The training sessions focused on building a culture and norm of loving and respecting elephants, as well as on safety around elephants to handle potential encounters with elephants on foot on village land.

- Over 12,850 people attended football matches, and 300 people attended netball matches
- Over 3,700 students were trained at twenty primary schools and a secondary school
- Over 2,500 children were trained during football matches
- Over 4,500 people attended film nights at which Swahili-language wildlife films were shown
- Over 2,000 people assembled for community training held before or immediately following matches
- For the first time, the Tembo Cup hosted netball matches, a game played by women in Tanzania. Six teams participated and we hope more will join in 2022.



One of STEP's local elephant monitors conducting awareness-raising at the Tembo Cup football tournament



Women's netball team participating in the Tembo Cup netball tournament

2.3 Capacity building

In 2021, one Tanzanian student and two Tanzanian volunteers participated in human-elephant coexistence activities and learned fieldwork and community engagement methods.

STEP hosted nine members of a Rapid Response Task Force formed by the Tanzania Wildlife Management Agency (TAWA) and trained them on our beehive fence model. This unit will be called to support communities as they respond to human-wildlife conflict as part of Tanzania's National Human-Wildlife Conflict Strategy

In December 2021, STEP hosted 18 rangers from protected areas across southern Tanzania, representing TAWA, TANAPA and KDU. These rangers completed a two-week intensive bushwalking course where they learned the foundations of elephant behaviour and how elephants utilise their habitats. The rangers then applied this knowledge to training on a human-elephant conflict mitigation tool kit, developed by Honeyguide Foundation. Teams considered their operating environments, the types of situations in which they encounter human-elephant conflict and new ways to deter elephants, integrating their knowledge on animal behaviour. This multifaceted training helped to address central aspects of Tanzania's Human-Wildlife Conflict Strategy.



Rangers receiving HWC response training

To support more effective human-wildlife conflict response by protected area management agencies, STEP also provided almost 10,000 litres of fuel Rungwa-Kizigo-Muhesi Game Reserves, Uzungwa Mountains National Park, and Nyerere National Parks for HWC response.

Our trained village-based team (Local Elephant Monitors) continued with data collection and training for farmers. While surveying elephant activity, they visit and train farmers affected by elephant damage in their communities. In 2021, over 2,000 farmers were trained in two villages (Rungwa, and Doroto) by this team. The training focused on staying safe, measures to avoid or reduce human activities in areas preferred by wild animals, and ways to protect crops from elephants, such as improving food stores and using chilli.

3. Conducting elephant research to inform conservation efforts

The goal of this programmatic area is to collect and analyse data to inform the formulation of meaningful and sound conservation strategies, as well as to monitor the impact of our conservation work. The geographic focus of this program comprises the Ruaha-Rungwa and Uzungwa-Selous ecosystems. The main activities under this program include:

- Running a long-term elephant research project in Ruaha National Park to assess population status and to investigate tusklessness, ecology and behaviour
- Monitoring elephant distribution and status in the forests of the Uzungwa Mountains
- Monitoring wildlife corridors
- Assessing spatial and temporal trends in human-elephant interactions and evaluating solutions
- Collaboration and development opportunities for early career researchers from inside and outside of Tanzania

3.1 Monitoring elephants in the Ruaha-Rungwa ecosystem

The elephant monitoring program in Ruaha National Park under STEP's affiliated research project aims to collect long-term data on elephant population structure, tusklessness, distribution and behaviour. In 2021, the research team conducted intensive dry season fieldwork to enable a new demographic assessment for the Ruaha elephant population. The demographic assessment will describe the current age-and-sex structure of the population and will help us understand to what extent the Ruaha elephant population has begun to recover from the effects of the poaching crisis of 2009-2015. In 2021, we welcomed a new Tanzanian researcher, Loyce Majige, to the team. Loyce has a lifelong passion for conservation and elephants and joined STEP while completing her Master's in Conservation Management of African Ecosystems at the University of Glasgow, Scotland. Loyce was also part of the inaugural class of the Grumeti Fund's *Women in the Field Program*, a skills training initiative for Tanzanian women conservationists, and is a role model and source of guidance for other young women interested in a career in conservation.

3.2 Monitoring elephants in Uzungwa-Selous

A key objective of STEP's work in the Kilombero Valley is to support the recovery of the Uzungwa-Selous elephant population and to secure long-term connectivity for elephants between Uzungwa and Selous through restoration of the Kilombero Elephant Corridor, a historic corridor that spans the Kilombero Valley. To monitor our progress toward this objective, we monitor elephant presence and status in Mwanihana and Magombera forest, which form endpoints of the Kilombero Elephant Corridor, as well as elephant presence in the corridor area. We hope to see an increase in elephant use of the forest and corridor area over time as a result of our conservation efforts. In 2021, we continued monitoring of elephants in Mwanihana forest (first begun in 2015) and Magombera forest (begun in 2019) to collect data on elephant use of these forests through foot transects. Our monitoring suggests that elephant use of Mwanihana forest in Uzungwa has increased over the past six years – a positive indication that the forest is becoming safer for elephants.

3.3. Studying human-elephant interactions

To help plan and evaluate human-elephant coexistence strategies, we continued to monitor elephant activity and crop losses on village land. In 2021, we worked with 12 local elephant monitors (LEMs) across seven villages in the Rungwa-Doroto and Kilombero valley project areas. Each elephant monitor is provided with training and regular performance feedback, and a GPS unit. All data collection is done using KoboCollect. These data informed our work in a number of ways, including 1) to help us select locations for trials of novel elephant deterrents, 2) to assess baseline crop damage to elephants prior to restoration of the Kilombero Elephant Corridor; and 3) to evaluate trials of novel crop protection methods.



Local elephant monitors receiving training in KoboCollect, a mobile data collection app

3.4 Trialling farm-based interventions

Finding affordable and effective ways to protect farms from elephants is one way that we aim to enhance coexistence between people and elephants. STEP is seeking to expand its portfolio of crop protection measures through comprehensive trials of the effectiveness of smelly repellent (a foul-smelling fermented mixture) as an elephant deterrent. Our trials of smelly repellent fencing are the most extensive trials of this method to date, and our rigorous monitoring has given us a clear understanding of efficacy. We learned that the repellent deters elephants attempting to enter farmland more than half of the time, but also that there is a risk of elephants habituating to the repellent. Through interviews, we learned that farmers perceive the repellent to be effective and that there is a broad interest in using this method to protect their crops, but that the primary barrier to farmer uptake is cost; hence, future work will explore ways to lower costs. We presented the results of our smelly repellent trials at the Tanzania Wildlife Research Institute scientific conference and are pleased that our experience and approach have informed trials of smelly repellent fencing in Zambia and Kenya.



Elephant caught on camera trap at the smelly repellent trial fence

3.5 Capacity building

Master's student support

One of our goals is to build capacity for research in Tanzania and, in doing so, facilitate scientific studies that inform our elephant conservation work. To this end, we launched an initiative in 2021 to support Tanzanian Masters students in the conservation field. Through this initiative, we help students to design a research project and provide mentoring and training in data collection methods and data analysis, as well as provide a bursary to support their fieldwork. In 2021, we supported two students from the Sokoine University of Agriculture: Irene Laizer and Lowassa Moitiko. Irene is studying how people and elephants share water sources located on village land adjacent to Rungwa-Kizigo-Muhesi Game Reserves, and Lowassa is studying the age-and-sex structure and activity patterns of elephants at the forest-farm interface in the Kilombero Valley. Through this training opportunity, Irene and Lowassa have gained a valuable skill set and field experience that we hope will serve them well in their conservation journey. Their theses, which are expected in the second half of 2022, will also help inform STEP's conservation work. In 2021, STEP also continued a research collaboration with a student from the University of Newcastle, who completed her Masters' thesis using data from STEP's research data.



Master's student Irene Laizer conducting interviews

Training on human-wildlife interactions

A first step towards managing human-wildlife conflicts is to assess human-wildlife interactions, including developing a better understanding of wildlife impacts and animal behaviour. To better equip practitioners to conduct such assessments, STEP and the Polish Mammal Research Institute facilitated training on methods for assessing human-wildlife interactions, with a special focus on mobile data collection, the use of GIS, and camera traps, as well as their applications to monitoring of human-wildlife interactions. The training was attended by 15 practitioners from a range of institutions, including Tanzania National Parks, Tanzania Wildlife Management Authority, academic institutions, District Government and NGOs. As well as learning a range of new technical skills, participants discussed how to apply what they had learned in each of their daily roles.



Participants learn GIS skills to help them assess human-wildlife conflict hotspots

References

- Harrison, P. (2006). Socio-economic study of forest-adjacent communities from Nyanganje forest to Uzungwa Scarp: a potential wildlife corridor. *Incorporating livelihood assessments and options for future management of Uzungwa forests*. World Wide Fund (WWF) for Nature, Dar es Salaam.
- Jones, T., Cusack, J.J., Pozo, R.A., Smit, J., Mkuburo, L., Baran, P., Lobora, A.L., Mduma, S. and Foley, C., 2018. Age structure as an indicator of poaching pressure: Insights from rapid assessments of elephant populations across space and time. *Ecological Indicators*, 88, pp.115–125.
- King, L.E., Douglas-Hamilton, I. and F. Vollrath (2011). Beehive fences as effective deterrents for crop-raiding elephants: field trials in northern Kenya. *African Journal of Ecology* 49: 431-439.
- Lyakurwa, J. V., Howell, K. M., Munishi, L., & Treydte, A. C. (2019). Uzungwa Scarp Nature Forest Reserve: a unique hotspot for reptiles in Tanzania.
- Rovero, F., Menegon, M., FjeldsAa, J., Collett, L., Doggart, N., Leonard, C., ... & Burgess, N. D. (2014). Targeted vertebrate surveys enhance the faunal importance and improve explanatory models within the Eastern Arc Mountains of Kenya and Tanzania. *Diversity and Distributions*, 20(12), 1438-1449.

Rovero, F., Mtui, A., Kitegile, A., Jacob, P., Araldi, A., & Tenan, S. (2015). Primates decline rapidly in unprotected forests: evidence from a monitoring program with data constraints. *PLoS One*, 10(2), e0118330.

Thouless, C., Dublin, H. T., Blanc, J. J., Skinner, D. P., Daniel, T. E., Taylor, R. D., ... & Bouché, P. (2016). African elephant status report 2016. *Occasional Paper Series of the IUCN Species Survival Commission*, 60.

Topp-Jørgensen, E., Nielsen, M. R., Marshall, A. R., & Pedersen, U. (2009). Relative densities of mammals in response to different levels of bushmeat hunting in the Uzungwa Mountains, Tanzania. *Tropical Conservation Science*, 2(1), 70-87.

Scheijen, C. P., Richards, S. A., Smit, J., Jones, T., & Nowak, K. (2019). Efficacy of beehive fences as barriers to African elephants: a case study in Tanzania. *Oryx*, 53(1), 92-99

Policy on Reserves

The Charity operates with limited cash reserves. The Trustees' objective is to maintain a sufficient balance to meet committed expenditure on current projects and cover foreseeable administration expenses.

Financial Review

The accounts are provided as a separate document.

Approved by the trustees on 23.10.2022 and signed on their behalf by:

Helen Pearson

A rectangular box containing a handwritten signature in black ink, which appears to read 'Helen Pearson'.

Dated: 23.10.2022