

Adopting Effective Approaches to Mitigate Human Wildlife Conflict in the South Katavi Ecosystem

Landscape and Conservation Mentors Organization (LCMO)

www.lcmo.or.tz

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Photo credit: Emmanuel Stephen

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At the start of 2020, LCMO was awarded a grant from IEF that focused on enhancing human elephant coexistence through introducing low cost farm-based deterrents such as beehive fences, chili-based olfactory repellent conservation education and citizen science. We received the grant in March 2020 and at a difficult time when Covid-19 was at its peak across the globe. Most of our activities were hugely affected but it did not stop us from achieving our goal so we had to find alternative ways of accomplishing them and bringing impact to the local community. The first phase ended in July 2020 and the second phase ended in early April 2021.

Despite challenges that came with the outbreak of COVID-19, LCMO managed to achieve numerous activities, some activities changed, new emerged but all were within our goals and objectives. Key activities accomplished in the two phases include;

PHASE ONE

- I. Reaching 1783 households through short trainings on ways to reduce human elephant challenges in 5 villages; Mirumba, Ilalanguru and Kibaoni, Ikuba and Kizi.*
- II. 10 Village council meetings held reaching 106 village leaders in 5 villages.*
- III. Produced an elephant information pack that highlight in details human elephant conflict in Tanzania, different mitigative measures and also a description why elephants raid crops based on a research conducted in Udzungwa Mt NP.*
- IV. LCMO produced 3500 different brochures on elephant ecology and mitigating human elephant conflict that not only reached people in these 5 villages but also extended to Nkasi District in villages 5 villages bordering Lwafi Game Reserve, Tanganyika District in 7 villages bordering Katavi National Park in the North and Lyamgoloka wildlife corridor (between Katavi NP and Mahale NP), Nsimbo and Mlele District in 11 wards bordering Msanginya-Mlele-Inyonga Forest Reserve, Kalihua District-Sikonge District in 5 villages borders Ipole WMA, Rungwa Game Reserve and two new National Parks; Ugalla River and Kigosi NP.*
- V. LCMO through other projects had 7 meetings and workshops in these areas so we took it as an opportunity to share our project ideas and as a results we developed relevant materials for presentation. The materials focused on; Dangerous Animal Damage Consolation Regulation of 2011, Wildlife Act No.5 of 2009 especially on trophy ownership section, poaching and ivory trade. All wildlife regulations, policies and acts of Tanzania are in English and most people are not well versed with the language and we assisted in translating them in Swahili.*
- VI. We have made 125 modern beehives to support the first 25 farmers . Purchasing them was slightly expensive for us so we purchased timber, trained a local carpenter who prepared all the hives at an affordable cost. The first group of farmers received hives and we have recently installed them as shown below (picture). We have also trained 10 village monitors who assisted us in local people in elephant data collection and this is still going on.*
- VII. We conducted 10 elephant conservation film shows and conservation education in schools 4 schools (2989 students) reached in mid-July after schools have opened and restrictions eased.*
- VIII. We also conducted mobile awareness to sensitize on COVID-19 awareness between March and April in remote 4 areas where information on this virus was limited. People were trained on hygiene, signs and symptoms of COVID-19 and necessary precautions accompanied by demonstrations.*

PHASE TWO

- I. *2 out of 3 groups visited Katavi National Park ; 50 students and 50 community members. We were supposed to conduct 4 but due to increased unavoidable costs, we reduced to them to 3. The third one will be conducted in late April after rain season as roads in the park are now impassable.*
- II. *We have directly reached 488 households with conservation education and short training on conflict mitigation strategies. In this season, most farmers have moved into their camps in farms hence not easily accessible at their homes*
- III. *16 elephant conservation films show were held in 5 villages reaching about 1749 people. In this wet season, most farmers are busy in their farms and cannot be easily reached.*
- IV. *1000 brochure and 120 booklets produced and distributed to 11 clubs in school and farmers groups in the five villages.*
- V. *11 schools reached through elephant conservation education and 7321 students received education.*
- VI. *Presented in two regional workshops on the status of HEC in our project area and our grassroot efforts to reduce conflicts – attended by 64 people. We also had an opportunity to discuss the **National Human Wildlife Conflict Management Strategy of 2020-2024.***
- VII. *85 beehives produced and shared to the second beneficiary group of 17 farmers. Few extra costs added up and reduced the number of hives produced.*
- VIII. *LCMO installed 3 stations with loud speakers' systems in 3 villages to serve as early warning system to the community around Katavi National Park. The system is used by village monitors to announce the presence of wildlife in the village for locals to take precautions. To this far, many incidents reported involved elephants and lions and locals took necessary actions. We have also used the system to provide recorded conservation tips to locals and can reach up to 5 km away from the station.*
- IX. *Beehive occupation – we had a challenge of bee occupation in the first phase and we consulted local experts and around January - march over 130 beehives have been occupied by bees. We hope to harvest our first honey in between May and June.*
- X. *We have surveyed a total of 685 farms and recorded 1312 incidences of crop damage.*
- XI. *A total of 42 (25 in the first phase and 17 in second phase) farmers have been supported with beehives. Out of this, 13 farmers recorded a total decrease in crop raid, elephants only passed through the farms and minimal destruction noticed. six other farmers noticed that elephants changed the route. Elephants seems to avoid farmers that have beehives and those neighboring it. We are still at an advance stage and we will monitor to further get clear understanding of the impact of beehives.*

GOALS OF THE PROJECT

1. To Introduce 'multi-value' and low-cost farm-based elephant deterrents that are affordable and applicable among the locals to reduce cases of crops raids.

Before implementing a mitigative measures to reduce crop raids from elephants, we felt it was wise first to educate the locals on different locally applicable mitigative measures. To this far, we have managed to produce different materials including a detailed information pack on human elephant conflict and mitigation of HEC. In both phases, we printed 4500 brochures (3500 in phase I and 1000 in phase II) on elephant ecology and manual on constructing chili and beehive fence and compiled other documents to produce one booklet which we produced 120 copies.

These materials reached 1783 households (first phase) and 900 households (second phase) in the 5 villages we are working with. We have also distributed these documents in form of hard and soft copy to 6 new districts that LCMO recently expanded to. Farmers from the new areas who received our education materials from Nkasi District requested for further training and we are glad that IEF laid the foundation and achievement reached helped us win a grant from the Rufford Foundation to facilitate project expansion. In the first phase 25 farmers received 125 beehives (each 5) of which they will be also required to add with other traditional hives of which 20 farmers have been able to add at least 10 traditional beehives. In the second phase, it was had to secure low cost timber hence forced to reduce the number of beehives to be produced to 85. So far, we have seen a strong motivation among farmers to construct traditional hives. So far, 13 farmers gave positive results on the presence of beehives in their farms. Crop lose only occurred on a small scale, elephants only trampled some crops while six farmers noticed elephants diverting away to avoid farms with beehives.



We had a discussion with different stakeholders on a better way to implement chili farming. From our survey, 5 prominent farmers from Nkasi recommended chili bombs work better than chili fencing and one of them promised to help order for us firecrackers from Zambia which will be used to implement this. As we wait, we trialed another method which involved collecting dumped plastic bags, filling them with a mixture of chili powder and grinded ginger and we hanged them along a wire set around the farm with crops. In the five farms that we trialed, two were invaded by an elephants. This method has one challenge, every times it rains, the mixture is washed by rain every time it rains.

Also, LCMO had an opportunity to take part in 9 (7 in the first and 2 in the second phase) Wildlife Law Enforcement Stakeholders Workshops where the project leader presented on human elephant

conflict in Tanzania and measures taken to reduce the conflict. In one of the workshops in the second phase, we were privileged to receive a presentation from the Ministry of Natural Resources and Tourism on the [National Human Wildlife Conflict Management Strategy of 2020-2024](#). Our presentation impressed majority and raised a lot of discussion questions which were all answered by the LCMO team in collaboration with Tanzania National Park Authority and Tanzania Wildlife Authority. Additionally, our efforts at grassroots level will be identified as one of the many national conflict mitigation efforts working toward achieving goals of the above strategy. Some also requested and suggested that we further support more villages and villages. A total of 448 conservation stakeholders were reached in these workshops.



Figure 1: A photo of an elephant deterrent set in one of the farms (Left), a representative from the ministry of Natural Resources sharing a presentation of human Wildlife Conflict Management Strategy

In the first phase when, our team spent a significant time preparing elephant education and awareness materials for the community. The table below shows a summary of documents we produced during the partial lock down in Tanzania and we used to promote human elephant coexistence knowledge;

DOCUMENT	TOPICS and Reason for this topic	WHERE USED
Fahamu zaidi kuhusu tembo wa Afrika (Know about African Elephant) - brochure	Species of elephants in the world with image demonstration, Role of an elephant in the ecosystem, Social structure and behaviour of elephants, status of elephants in Tanzania and role of citizens in the conservation of natural resources according to the Tanzanian Constitution of 1977. We prepared this document to help bridge the knowledge gap about elephants and their conservation in communities bordering Katavi National Park.	Used for promoting elephant awareness in schools and in the villages under this project
Njia za kuzuia tembo kuingia mashambani (Ways to prevent	Beehive fences with pictorial illustrations, construction of chili fences with pictorial illustrations and other	Used in the project area villages and further

elephants from raiding farms) – brochure	methods such as flash lights, use of horns and chili dung	distributed to seven districts where LCMO expanded to.
Human Elephant Conflict Information Pack	This deeply highlighted human elephant conflict in National context and covered the following topics; The importance of coexistence, legal context of human elephant conflict in Tanzania, wildlife corridors of Tanzania, causes of human elephant conflict, reason for greater contact between people and elephants, types of human elephant interaction, understanding why elephants feed on crops and enhancing human elephant coexistence (mitigative measures)	Presented in two of the workshops on Wildlife Law Enforcement Stakeholders Workshop, used as reading material for village government officials and some communities members. This is a very detailed document and important tool in our awareness campaign but few copies were produced as we didn't have enough budget for this.
Dangerous Animal Damage Consolation Regulation of 2011	In our proposal, we highlighted a conflict on who is responsible to manage stray animals between the park and the district council. Farmers in the project area have not been able to request for compensation/consolation because they were not aware of the proper channels to follow. This regulation has covered on all procedures on problem animal management and compensation/consolation procedures. It is covering the following topics; application for consolation, application forms restriction on payments of consolation, eligibility for consolation, rates of payments and offences and penalties if you give false information in attempt to receive consolation. We translated parts of the regulation into Swahili for easy of reading by the local community	We presented this in 3 workshops and also shared it to the village government officials who are the people supposed to help the local community apply for compensation for any loss caused by wildlife including elephants.
Wildlife Act No.5 of 2009 (Part XI on government trophy)	Many people have found themselves in trouble for owning elephant and other animals' parts illegally. Some faced heavy penalties while others faced over 10 years imprisonment. We noticed that many people are not aware that all forms of wildlife trophies belong to the government and for one to own it, one must have a legal permit from the government. Some people have been possessing these parts for traditional medicinal uses and this has promoted poaching of different wildlife sps in some ways. The document highlights on types of government trophies, unlawful possession of government trophies, duty to report possession of government trophy and disposal of government trophies. This section of the wildlife Act defines high penalties for illegal ownership of wildlife trophies and if the community is well informed on this, it will discourage people from killing animals for their trophies. For instance, illegal	We presented this document in one of the workshops in the project area (Mpimbwe) but also shared copies to village governments leaders and village level police officers who are law enforcers at village level. We also shared them to traditional medicine men/women and in some way it will discourage ownership wildlife trophies hence reduce poaching.

We also saw the need of engaging the village council in this project. This is because we noticed that the challenge of human wildlife conflict is not being given a priority in the target villages and district level conservation and development objectives. We wanted to ensure that the challenge of HWC is identified and included among other challenges facing conservation and communities. Additionally most human wildlife related conflict first reaches these group and their influence is vital in promoting project activities at village level. We held two meetings in every village and reached 106 village council leaders in the five villages we are working with. We also shared with them our information materials to help them in their daily activities. They will be our good will ambassadors in promoting human elephant coexistence in their respective villages. Through their active participation, we will ensure HWC is well understood village level leaders and can be even included village level conservation and development objectives for the benefit of both wild animals and people's well-being.



Figure 3: Village Council Meeting



Village	Household reached in both phases	Activities conducted
Kizi	349	Introduction to beekeeping, training on how to set up simple beehive fence, training on how to make chili + oil mixture, distribution of different brochures and simple discussion on elephant behaviour.
Mirumba	519	Introduction to beehive and chili fences with demonstrations, general discussion about elephants and their behaviour and distribution of brochures
Ilalanguru	329	Introduction to beehive and chili fences with demonstrations, general discussion about elephants and their behaviour and distribution of brochures
Kibaoni	625	Introduction to beehive and chili fences with demonstrations, general discussion about elephants and their behaviour and distribution of brochures
Ikuba	449	Introduction to beehive and chili fences with demonstrations, general discussion about elephants and their behaviour and distribution of brochures
TOTAL	2271	
NB: LCMO has already conducted beekeeping trainings in Mirumba, Ilalanguru, Kibaoni and Ikuba and that is why we have only conducted it in Kizi.		

We have recruited 10 local elephant monitors to assist us in collecting and reporting human elephant incidences around the project area. During this phase, they also assisted in informing Tanzania National Parks Authority (TANAPA) and Tanzania Wildlife Management Authority (TAWA) on stray elephants which assisted immediate action. Through this team, we managed to report 63 incidences of crop raiding elephants which all received a prompt response from the responsible authority. In the second phase, the installed loudspeakers helped a lot to alert farmers on the presence of elephants hence collaboratively chased the elephants away. Beside elephants, they have also assisted in reporting other stray animals for instance a hippo that attacked a farmer, unfortunately the hippo was killed. Two buffaloes were also spotted in Kibaoni and through their support, they managed to call TANAPA rangers and the animals were driven safely back to the park.

We have collected data in the rain season and dry season and currently finalizing cleaning and analyzing the data. In the dry season, elephants roam in village land in search of water, sorghum, sweet potatoes, cassava and pumpkins and small gardens along river beds. We have identified 3 main water points in Kibaoni village – village that directly borders Katavi NP and are potential source of water for elephants and other wildlife. We have managed to identify some animals using the water points through footprints identification – many seems to be from elephants and small bovids. Incidences of wildlife snaring has been witnessed around these water holes. This data will provide baseline information for development of a mitigative strategy in the five villages.



GOAL 2. Promoting elephant conservation education and awareness among the local communities.

Rural communities are among the most affected by human elephant conflict and are an important audience to engage in elephant conservation issues. Participants of the workshops held by LCMO has also highlighted the importance of engaging the rural communities in conservation education and awareness. In the first phase, When we received the grant in march 2020, schools have closed and all public gatherings have been banned due to the outbreak of Covid-19. This did not stop us from reaching the community, we instead distributed the educational material we produced to schools where students can go and collect them although very few students visited schools during this time. We also distributed Swahili educative brochures to all households reached. Educational institutions opened back on June 29, 2020 and in July 15,2020 we resumed conservation education sessions with students and reached 4 schools with 2989 students. We also we also reached about 2187 people through 10 films sessions.

In the second phase, we increased our outreach and by 5th April, 2021, we conducted 16 elephant conservation films show in 5 villages reaching about 1749 people despite being the season that most farmers are out busy in their farms, 2 out of 3 groups visited Katavi National Park ; a 100 people visited Katavi National park (50 students and 50 farmers). We were supposed to conduct 4 but due to increased unavoidable costs, we reduced to them to 3. The third one will be conducted in late April after rain season as roads in the park are now impassable. We have also directly reached 488 households with conservation education and short training on conflict mitigation strategies.

11 (4 that were reached in the first phase and 7 new schools) schools reached through elephant conservation education and 7321 students received education.





Figure 5: Students at Hippo view point in Katavi National Park

In addition to film shows, we had enough opportunity to engage the local community in outdoor awareness events. We held 5 public awareness gathering on human elephant coexistence which also included traditional performance and dancing . Training and awareness on elephant deterrents was an activity of 10 days per month in the first two month but we included it in our all year outreach activities because we noticed a big number of farmers in these villages and two months won't be enough to reach all of them and also new farmers groups are moving into these areas continuously hence education needs to be continuous as well.

These village level awareness events gave an opportunity to hear from the community on what they know about elephants, what they know about bees, chili and crop raid mitigation. Those that actively participate in these events receive rewards which is either a t-shirt, a cap, calendar or even reusable bags.

LCMO installed 3 stations with loud speakers' systems in 3 villages to serve as early warning system to the community around Katavi National Park. The system is used by village monitors to announce the presence of wildlife in the village for locals to take precautions. To this far, many incidents reported involved elephants and lions and locals took necessary actions. We have also used the system to provide recorded conservation tips to locals and can reach up to 5 km away from the speakers.

These events have also been great avenues for raising awareness about the impact of elephant poaching and the ivory trade on Tanzania's elephant populations. We also

emphasized on the effects of encroachment, importance of preserving buffer zones and elephant corridors.





Figure 6 (Top) a student demonstrating elephant drawing during a conservation education class, (Middle) elephant film show in the village, (Below) Village awareness events

3. Introducing a community elephant monitoring team (citizen science) to survey crop raiding patterns and trends and the effectiveness of the mitigative measures.

Crop production is the principal economic activity in the local community surrounding Katavi National park. Elephant's raids upon these crops are thought to be key constraints on income generation. This project made the first survey of farms around Katavi National Park and Mpimbwe WMA fully understand the temporal and spatial patterns of crop raids which will help and allow implementation of effective mitigation measures.

We have recruited 10 elephant monitors but also the beehive beneficiaries have accepted to be part of this monitoring team. We trained them in their respective villages and provided them with datasheets that the project leader review at the end of every week.

We have trained them on data collection, using a GPS, digital camera, computer and beekeeping equipment. Despite the fact that we have very limited resources to support all of them, they have been sharing and this has also delayed collection of some crucial data. Currently, LCMO has only 2 digital camera which is shared with other projects, 2 GPS which cannot serve all the 5 villages. We expected to receive some of these materials but due to the outbreak of Covid-19 they will delay until borders open again. We have received a honey pressing machine and 5 pairs of bee suit from Nomad Tanzania and they are also planning to add few materials before the next quarter.

Since March 2020, we have surveyed a total of 685 farms and recorded 1312 incidences of crop damage. Incidences of elephants presence and crop raids are still high in both dry and wet season and this calls for more actions to help farmers protect their crops. Our monitoring team conduct 3 official survey every month but were available every time a crop raid incidence is reported by farmers. We ensured

that our selected elephant monitors are active and maintain communication with farmers who are a good source of information. They respond to every reported case and sometimes have to report to the park authority for more assistance. Additionally, the early warning system helped them with information on incidences of crop raiding.

In the first phase, during these farm survey, we have also noticed some incidences where farmers cut down their maize in the farm before they dry. Crop raiding elephants majorly target maize cobs hence usually go for maize that are standing. Farmers reduces this by cutting them down and this helps reduce the chances of being destroyed by elephants. Harvesting maize before they are fully dry and when the rain season is still on makes them difficult to dry increases chances of attracting fungi which have toxigenic effects on the final consumer. We have also witnessed this in the second phase. We have also managed to report this to the local agricultural officer and they have started addressing this. They also assist in elephant education and in distribution of elephant educative materials.

We are finalizing our data collection on human elephant conflict and a separate report on this will be out soon and shared to stakeholders.



Figure 7: Elephant dung in the farm and Mr. Emmanuel in one of the farms visited by elephants

Describe any activities that differ from the original proposal and explain the reason for the change.

The outbreak of COVID-19 significantly disrupted our field and indoor activities especially in the first phase.

Some activities delayed while others were accomplished partially. Some activities such as park trips delayed and conducted in the second phase.

After visiting experienced farmers around Lwafi Game Reserve for benchmarking, we found that chili bombs work better than chili fencing hence we resorted to look for firecrackers to train farmers on how to make chili bombs. Luckily, we got a person to sponsor this activity and will be implemented once fire crackers arrive from Zambia.

In the first phase, due to COVID-19 restrictions, we majorly conducted household outreach although a bit expensive than holding meetings.

We have also introduced village council meetings to build capacity of village leaders. These community groups work closely with farmers and they are the ones who always receive report elephant incidences. Their inclusion is vital in our effort to tackle human wildlife conflict in these villages as LCMO might not have enough resource to reach all community members.

Conservation education and class sessions officially resumed in mid-July 2020 and this was due to the closure caused by COVID-19. We have also produced

additional elephant education and awareness materials to help reach the wider audience especially during the COVID-19 restrictions.

In the second phase, we have not constructed fences but rather installed beehives within crop farms and connected with wires. We have previously in the first phase experienced additional costs of acquiring heavy duty wires for hanging bees.

Describe the conservation outcomes for elephants, other wildlife, habitat and human communities, and list major findings and accomplishments to date.

Katavi National Park (4,471Km²) and Mpimbwe Wildlife Management Area (290 km²) which directly borders the target villages are critical areas for myriad species of wildlife especially rare bovids population, as it lies near the Katsunga plain, Ikuu and Chada wet areas, across from the main tourist area within Katavi National Park (the safest area of the ecosystem), and therefore forms part of the range of the highest concentration of elephant and bovids in the ecosystem. Majorly sighted bovids species include; the rare sable (*Hippotragus niger*), roan (*Hippotragus equinus*) antelopes, African buffalo (*Syncerus caffer*) topi (*Damaliscus lunatus jimela*), impalas (*Aepyceros melampus*), waterbuck (*Kobus ellipsiprymnus*) and common eland (*Taurotragus oryx*) who mainly appear at the start of rain seasons. Recent ongoing monitoring identified four different packs of wild dogs (*Lycaon pictus*) a new evidence that the area is slowly recovering but more support is needed to build on existing efforts. The high abundance of bovid in the area likely to attract illegal hunters, lions and other cats but also become a lion hunting zone by the Sukuma warriors (Killing lions for reward). Through our conservation education program, we are witnessing many Sukuma community warriors actively deviating from killing lions and taking part in our conservation activities in these 5 villages.

In the first phase, our monitoring team was able to report other stray animals including a hippopotamus that attacked a farmer, unfortunately the hippo was killed. Two buffaloes were also spotted in Kibaoni and through their support, they managed to call TANAPA rangers and the animals were driven safely back to the park. In this ongoing phase, we have managed to report three other incidences of stray hippos who were in the midst of Ilalanguru village, 2 were driven to the park and one was killed. Also through our local monitors, we managed to report one illegal hunter to the village government which is in charge of Mpimbwe Wildlife Management Area and was charged although handling of cases at village level is still challenging. There are many incidences of wildlife poaching reported to us by loyal community members and we directly report it to Tanzania National Park Authority for action. Some cases are addressed but other ignored due to lack of sufficient evidence. This calls for training on cases reporting, collecting evidence and deployment of technology such as Camera-traps deployment and monitoring in different locations along poachers trails, and images used to identify poachers, facilitate arrests, and provide court case evidence.

Through this project we have also managed to break the common notion in farmers groups that we have managed to reached that the ever-increasing human elephant conflict is not caused by the increasing elephant population and but by the decreasing

range driven by ongoing agropastoral immigration. We have managed to reach people from all the five villages and held public events, film show and distributed educational materials.

We have also not heard of any retaliation in 2020 and early 2021 despite high records of crops incidences by elephants. Additionally, the elephant monitors have managed to report an incident of a stray hippo who attacked a farmer to the park authority who responded immediately, unfortunately the hippo was killed because it was hard to manage it in the water. Through this reporting team, we also managed to return two stray buffalo back to the park in Ilalanguru village. These team is also helping to foster a relationship between the local community and the park rangers who are always perceived to be harsh.

42 households benefited from hives and this has motivated other farmers to buy in this idea and are now making traditional beehives on their own and have placed them in their farms . This means that our outreach in the village is yielding new farmers group who are willing to initiate beehives fences in their farms at their own cost. We have six farmers in Kibaoni, 2 in Mirumba, in Ilalanguru and a farmers group in Kizi village.



Figure 8: Mr. Emmanuel inspecting a traditional hive from one of the new farmer and a group of farmers that willingly accepted to take part in our elephant conflict mitigation program.

Local farmers have heard of 'consolation'—a financial payment to assist hardship suffered through losses from dangerous wildlife but none in the area has ever received. Previously people were not aware of procedures to apply for this and also the regulation of 2011 that guides on who is eligible for consolation and how one can apply is not easily accessible among local farmers and also available in English. In the first phase, we reviewed all important sections and translated them into Swahili. This made it easy for the village government and the local farmers who always suffer losses from wildlife. We also had a workshop held in Mpanda and discussed with a representative from the ministry who promised to assist farmers in requesting for consolation. This is a major achievement and it will be the first time in Mpimbwe

We have also produced 4500 brochures in the two phases on elephant ecology and mitigating human elephant conflict that not only reached people in these 5 villages but also extended to Nkasi District in villages 5 villages bordering Lwafi Game Reserve, Tanganyika District in 7 villages bordering Katavi National Park in the North and Lyamgoloka wildlife corridor (between Katavi NP and Mahale NP), Nsimbo and Mlele District in 11 wards bordering Msanginya-Mlele-Inyonga Forest Reserve, Kalihua District-Sikonge District in 5 villages borders Ipole WMA, Rungwa Game Reserve and two new National Parks; Ugalla River and Kigosi NP. Each village received 50 brochures.



Figure 9: Farmers from Kibaoni with elephant brochures

Importantly, this project in a short time reached and impacted a big number of people has set a precedent for human elephant conflict mitigation in Western Tanzania by promoting beekeeping as a solution to for reducing crop losses from elephants. We hope to strengthen on efforts already achieved and also expand to neighboring district which face the same problem of elephants.

Approximately how many humans/communities are/were impacted by your project? Approximately how many elephants are/were impacted by your project?

According to the survey released by Tanzania Wildlife Research Institute indicates that Katavi Rukwa Ecosystem has an approximate population of 4,600 1,072 in 2018 (TAWIRI 2019), a decline from population of approx. 6,400 2009 (Mduma et al. 2010). According to Katavi National Park, Community Conservation Service Department, who are our close partners in community outreach events recently released statistics showing no retaliatory killing since January yet human elephant conflict is still a challenge.

LCMO installed 3 stations with loud speakers' systems in 3 villages to serve as early warning system to the community around Katavi National Park. The system is used by village scouts to make public announcement to target villages, announce the presence of wildlife in the village for locals to take precautions and also for conveying conservation education messages on daily basis. To this far, many incidents reported involved elephants and lions and locals took necessary actions. We have also used the system to provide recorded conservation tips to locals and can reach up to 5 km away.



Figure 10: One of the loudspeakers in the village used as an early warning system to the community and also for conveying conservation education

Despite restrictions caused by the outbreak of Covid-19, we still managed to meet a number of people through different activities outlined below;

**Wildlife Law Enforcement Stakeholders Workshops
between March 2020-April 2021**

S/no	Date	District Name	Number of stakeholders participated
PHASE I			
1	21/5/2020	Mpimbwe	49
2	09/6/2020	Nkasi	52
3	16/6/2020	Mlele	54
4	23/6/2020	Kaliua	60
5	26/6/2020	Sikonge	53
6	14/07/2020	Nsimbo	60
7	16/07/2020	Tanganyika	56
PHASE II			
8	12/02/2021	Mpanda	34
9	01-02/02/2021	Mpanda	30
TOTAL			448

Other activities and number of people reached

Type of activity	No. of people reached
26 Conservation film nights	2,187 (Phase I), 1749 (Phase II)
Household meetings in 5 villages	1,783 (Phase I), 488 (Phase II)
Conservation education in schools – 11 schools reached since July 15, 2020 to April 2021	2,989 (Phase I), 7321 (Phase II)
Village council meetings in 5 villages	106 (Phase I)
2 Park visitation	100 (Phase II)
TOTAL	16,723



Describe any problems discovered or that occurred during this grant period.

- The outbreak of COVID-19 significantly affected our field activities. We have to come up with a new work plan to help us implement activities and this means some activities have to change and others postponed for instance park trips which were later held in the second phase. We also have to increase work hours and team to implement field activities within timeline.
- In the first week of farm surveys, some farmers were unwilling to invite us in their farms fearing that we are from Tanzania National Park Authority and we are plotting to remove them as it is happening in the northern part of the park.
- Some farmers in the area cannot read and write and this took a lot of time working closely to ensure they better understand the content the brochures.
- Livestock keepers have a tradition of setting up fire in farms whenever crops are harvested. The district office outlawed this but some still do it illegally and it has hindered from setting up hives in far end farms in Mirumba village.
- In the first phase data was not collected in some weeks between April and May 2020 due to heavy rains and the local monitors lacked efficient field gears to cover them from rain. Same case applied between November and December 2020 and in March 2021.
- In the first phase, few hives had bees despite the efforts put in place by farmers our team. We had to transfer the hives into trees first to get the bees and return them to the farms. This worked successfully and we currently recorded high bee occupation. But also food for bees is scarce in the dry season but we are still exploring ways of tackling this challenge.
- Working with some farmers in the wet season was also challenging as most of them were busy in farms and could not voluntarily leave their work during the day to attend awareness events . They were only available in evening during film shows.
- We had an accident that affected our field activities around December and we resumed in January. This extended part of our field activities to April.
- Through this project, our focus was majorly on farm survey and in the village land mostly used by farmers, we have encountered 26 incidence of traps set for crop raiding small herbivores traps but the community always react when we intervene. This makes it hard for our team and some village officials insisted that we only focus on reducing incidences of crop raids and we should not intervene any wildlife hunting activity especially within village land. There are high incidence of snaring and illegal activities within the Mpimbwe Wildlife Management Area but our team was not able to take any action as it is under a different management and have their own Village Game Scout (VGS).

BUDGET AND EXPENDITURE FOR THE TWO PHASES

LCMO received an amount of USD 9250 and converted it into Tanzanian shillings at an exchange rate of USD 1.00 = TZS 2,312. We received a total of TZS 21,386,000.

BUDGET ITEM	AMOUNT ALLOCATED	AMOUNT RECEIVED FROM OTHER PARTNERS	TOTAL AMOUNT USED IN USD	TOTAL AMOUNT USED IN TZS	AMOUNT NOT USED FOR THE TARGET ACTIVITY	COMMENTS
Construction of 210 beehive fences	3750	245	3995	9,236,440	-	In the first phase, we did not encounter a big challenge in hive construction. We managed to produce 125 beehives. In the second phase, we had a challenge of getting the right timber for making beehives at the budgeted despite a small support from LCMO. We had to reduce the number of hives to 85. We are currently running a fundraiser to support the remaining farmers. Other additional costs included painting the hives and writing the funders names
Allowance for 10 local monitors for 12 months	2000	-	2000	4,624,000	-	This has been spent as planned although they are willingly helping us even now after the project grant to pay the is over.
Accommodation during project related activities	500	-	350	809,200	150	\$210 was used by the project manager to attend the Pathways conference in Kenya and \$140 was used by part of the team to attend 2 workshops in Mpanda town. The balance (\$40 was used to purchase chili for training and \$110 was added to the park trip)

Balance from lodge and accommodation		-	150		-	Part of this was used to purchase chili for household training (\$40) and to cover additional cost in the park trips (\$110).
Fuel	1200	300	1500	3,468,000	-	We mostly used the vehicle during the wet season of April and May. LCMO added an extra USD 300 to finance distribution of hives to farmers which was not initially in the budget. The amount added LCMO was used in the first phase. In the second phase, some farmers picked up part of their hives at our office and some other constructed in the village and farmers did not
Park trips	1000	110 (balance from accommodation) and LCMO and Nomad Tanzania topped up \$ 300	1410	3,259,920	470	Each park trip costed \$470. The cost increased due to need to hire a large spacious bus that allow proper ventilation and space for people maintain distance from each other.
Allowance for project leader and assistance	500	500	1000	2,312,000	-	LCMO added \$50 (first phase) to cover cost of an additional assistant. In the second phase, LCMO together with Nomad Tanzania provided \$450 to support the additional assistant and also purchase protective gears (including PPE and sanitizers) during field activities.

Production of elephant information pack and brochures	300	250	550	1,271,600	-	LCMO added extra fund (\$180 in the first phase and \$70 in the second phase) to facilitate more production of enough brochure to reach as many people possible.
TOTAL AMOUNT USED	9,250	1,595	10,845	25,073,640		

Was your project successful? State short and long-term goals that you are using to evaluate your accomplishments.

Despite the challenge of COVID-19 that brought fear among people but also led to movement restrictions and lockdown. We reached a significant number of people that we never expected. Additionally community willingness to participate in our film shows, public events, willingness to construct own traditional hives and large number of students turnout in our school events strongly suggest a strong acceptance of the project.

- Increased willingness to adopt beekeeping as a mitigative measure from crop raiding elephants – all the 42 supported farmers added over five beehives in their farms. The highest has 15 traditional beehives in his farm. Also, we inspired a new group of farmers to join this conflict mitigation program. We have new six farmers in Kibaoni, 2 in Mirumba, in Ilalanguru and a farmers group in Kizi village. We have also received some farmers in our office requesting to be supported with beehives. This program is continuous and we believe after our first harvest, we will attract new farmers. More farmers will be attracted by the honey harvest from other farmers.
- High number of local farmers participation in our field activities – film shows, school events and public awareness events. We have reached about 16723 people through these events and many others through various educational/awareness materials and through the loud speakers.
- We have inspired the local community to actively engage in citizen science program. The 10 local elephant monitors we selected from the village did a great job in facilitating data collection and monitoring elephant movements. Beside these monitors, some farmers who benefited from beehives and even non beneficiaries have been informing us on the presence of elephants and any other stray animal in the village land.
- We have also witnessed the community giving information on stray animals to be driven back to the park. Previously, people used to kill stray buffaloes but over the last one year, we have witnessed the local community giving information on the presence of such animals and they were safely driven back to the park.
- Through park trips, those who did not managed to visit have been pressing that we organize for park visitation at their own cost. Those who visited must have

given information about the beauty of Katavi NP. Such news gives a clear indication that people are seeing the value of Katavi NP.

- Despite late bees occupation in the hives, we still received reports of elephants staying away from few farms and elephants changing routes. We are still monitoring this and after at least one season, we can make a conclusion of the impact of beehives in farms.

Based on this Project, what is the “next step” for this project and does it have implications for future conservation actions?

As other programs under LCMO, we have plans to promote this project and publicize our local efforts taken by farmers we are working with. This might serve as a model that can be adopted elsewhere. We have strongly communicated our efforts and achievements with our close stakeholders and both we identified key ideas that that can be adopted as next steps from this project. The ideas include;

1. To invest in early warning systems – these can reach many farmers over short period of time. During the wet season, it is hard to hold conservation awareness events during the wet season because many farmers are busy in farms but loud speakers can reach them even while in farms.
2. Invest in making chili bombs – prominent farmers who we visited for benchmarking insisted us that chili bombs have reduced crop lose around Lwafi Game Reserve. This will also involve constructing few watchtowers to monitor elephants. We also look forward to support another group of farmers with beehives to further enhance livelihood and mitigate human elephant conflict.
3. Enhance conservation education through park visitation, film shows, conservation education in schools and awareness events and competitions. This will also involve production of Swahili based brochures and other articles. These materials reaches many people and can also be used to publicize the efforts taken and the project in general.
4. To continue collecting data which can be used for evaluation. This help identify changes over time, performance of beehive fences/ presence of beehive in farms in reducing human elephant conflict.

Most activities that we are currently achieving are geared toward enhancing human elephant coexistence but on a greater scale, we are working to help achieve goals of the [National Human Wildlife Conflict Management Strategy of 2020-2024](#). Being the only grassroots organization around Katavi National Park and this being the first human elephant coexistence project, we are commitment to improve our idea of handling HEC through conservation education, citizen science and application of mitigation strategies. We are grateful that we have established a solid foundation through actively engaging the local community and this will ensure it will be sustainable even beyond the funded timeline.

Provide at least one human interest story. This story should enable the reader to identify with the people, a problem, day-to-day situations, achievements or a funny or strange occurrence during the course of the project. Examples: a story about when the bull elephant put his tusk through the window of the research

vehicle or the lion with a snare on his leg and the many weeks it took to find the animal and remove the snare or a specific family who benefitted due to the project. If available, please include a photo of the incident described.

Mr. Malambo is a local farmer based in Lala Nayo sub-village, Kibaoni village. He is a committed beekeeper but also recognized as a local comedian. In this village, farmers do jointly work together during farm preparation, planting and during harvesting. Before and after introduction beehives, farmers were still working together to protect their crops from elephants and other herbivores. One day a herd of elephants (with several calves, identified through footprints) invaded his farm and there was complete darkness. Mr. Malambo was only with his two boys in the farm camp near the fire, to his surprise, one elephant just rushed toward the fire place and they also fled away. The elephant rotated around the fire several times throwing soil using its legs into the fire trying to keep it off. Later on in the following day, Malambo reported the incidence to other farmers and elders in the village and they did not believe the incidence. They went to confirm and it was true that the elephant did that. It was an interesting experience and no one believed, some later associated the incidence with witchcraft. Some elders said that other farmers who are jealous of him might have used the elephant to invade his farm. This is because elephants always kept away from fire and they have been using it to keep off elephants for years. The story gained attention in the village and after one day, I visited the place and everyone expected me to give my comments on this. It was difficult to change the narrative that it was not witchcraft. I remember reading in some articles that elephants with calves rarely visit farms for the fear of endangering the life of their little ones. Additionally, a research done by Southern Tanzania Elephant Program on why elephants raid farms also highlighted that elephants with calves rarely visit farms. I noticed that if such scenarios happens, the adults might be playing aggressive to protect the young ones. Unfortunately, many still did not believed me, seems that it was hard to erase the previous association with witchcraft.



Figure 11: The fire place where the incident occurred, I arrived a day late after it has rained hence not clearly visible. A photo of Mr. Malambo with his beehives.

Another incidence highlight challenges encountered during the wet season. The roads are challenging any times it rains. Around December 2020, while going for the film show in Mirumba, our car lost control, almost hit a tree but managed to direct it into a trench which was a bit safer than hitting a tree. It was the toughest time in the field and worst experience since I started driving. The car was badly damaged but we walked out safely. I have to take few weeks break to recover from this incidence and also get time to repair the car. We later resumed the work and gladly everything later worked well. Actually, this was among factors that led our project activities to extend beyond March.



Figure 12: A photo of the car after the accident and locals trying to help remove the car from the ditch.

List all organizations associated with this project and their roles in the project.

- **Mpimbwe District Council-** Mpimbwe DC permitted us to carry out our activities in this area and we have been collaborating in promoting conservation education/awareness and livelihood projects. They also assisted us in supporting youth clubs by providing different sorts of equipment from the government that assisted conservation. We are currently working on new initiatives that aims to;
 1. Introduce energy alternatives to forest-sourced firewood: tree nurseries, village forests, agroforestry plots, energy-efficient stoves;
 2. Increase public awareness and education on environmental issues in general and on forest and its services in villages and 18 schools;
 3. Create new economic opportunities by promoting the Park and using natural resources in a sustainable way.
- **Tanzania National Park Authority (TANAPA)** – they provided us with free permits for the community and students to enter the park and collaborate with us in giving conservation presentations to different groups from the 5 villages. They also assisted us in handling stray animals from the park.
- **Tanzania Wildlife Authority** – they assisted us in promoting conservation education and collaborated with TANAPA to safely manage stray animals.

- **Nomad Tanzania** -This is a tourism company with a camp (Chada Camp) inside Katavi NP; They assisted us in raising funds from their camp visitors and through their program Park for a Purpose.
- **Tanzania Forest Service (TFS)**- is a semi-autonomous government Executive Agency whose mandate is to develop and manage forest and bee resources sustainably in collaboration with stakeholders in order to deliver sufficient and quality goods and services to meet local and international socio-economic and environmental needs. They assisted us in training and advising on appropriate ways to manage beekeeping. They visit our project every month and advise our farmers on ways to efficiently manage forest and bee resources.

Do you intend to publish and/or present your findings at a conference or symposia? Please provide us information about the journal/conference/symposia and a timeframe.

We have presented our field activities and achievements in 9 workshops so far and still expecting to do so in any meeting/seminar/workshop that we will attend. In April, we have a presentation with regional stakeholders on 19/04/2021.

I also expect to share final data of the status of HEC with stakeholders and organize a meeting with the above organizations that actively collaborated with us. And because this project is continuous, I expect to participate in different workshops and in every presentation, I will duly share the information with IEF. We currently don't have a timeframe of these events, many of them will be determined by the situation of C-19 here in Tanzania.

Has your project received any media coverage? If so, provide copies of the articles, videos, etc complete with web links if the coverage was online.

Mr. Emmanuel was interviewed by The Guardian (Tanzanian English Newspaper) on the issue of HEC and efforts needed to mitigate HEC and my views were highlighted in the article below.

Swift actions needed to address human-wildlife conflicts - link below;

(https://www.ippmedia.com/en/features/swift-actions-needed-address-human-wildlife-conflicts?utm_campaign=shareaholic&utm_medium=whatsapp&utm_source=im)

Please list all websites, blogs, social media accounts, etc associated with the project, its investigators, and organizations (this includes Facebook, Twitter, Instagram, etc)

Website: <http://www.lcmo.or.tz/>

Facebook: LCMO -Land Conservation Mentor's Organization (<https://web.facebook.com/lcmorganization>)

Twitter: @LCMO_Org (https://twitter.com/LCMO_org?s=09)

Instagram: @lcmorganization (<https://www.instagram.com/lcmorganization/>)