*Interim Report*

INTERNATIONAL ELEPHANT FOUNDATION.ORG

# *The Effect of Community Workshops and Elephant Movements on HEC*

Lynn Von Hagen, PI. Auburn University. lvonhagen@comcast.net
Dr. Bruce A. Schulte, Co-PI. Western Kentucky University. bruce.schulte@wku.edu
Dr. Chris Lepczyk, Co-PI. Auburn University. cal0044@auburn.edu
Dr. Sarah Zohdy, Co-PI. Auburn University. smz0003@auburn.edu
Dr. Mwangi Githiru, Co-PI. Wildlife Works. mwangi@wildlifeworks.com
Dr. Urbanus Mutwiwa, Co-PI. Jomo Kenyatta University of Agriculture & Technology. umutwiwa@jkuat.ac.ke

Project Start Date: 01 January 2020
Project Completion Date: 31 December 2020

## Conservation Needs and Progress (500 words)-363

Addressing concerns threatening elephant populations is necessary as overall African elephant populations continue to decline. In the Kasigau Wildlife Corridor (KWC) of Kenya, human elephant conflicts (HEC) continue to rise as the country's largest elephant population moves between Tsavo East and West National Parks. Poverty driven by poor crop yields, climate change, and lack of access to alternative livelihoods are part of the harsh economic reality for many in the KWC. These circumstances can cause villagers to lash out at what they view as an oversized pest, which sets the stage for negative human-elephant interactions, mostly from crop raiding by elephants. With minimal resources, these stakeholders have little access to the types of information that would be beneficial towards improving their circumstances. Providing deterrent measures for local communities is one way to reduce HEC and increase sustainable livelihoods. Measuring the attitudes and behaviors towards elephants and conservation is an important first step towards understanding each village's unique challenges. These types of data can also be used to create customized curriculum for workshop programs, which can bring valuable information to affected villages.

The global pandemic has prevented some of our initiatives, and our USA-based PI's will be unable to visit Kenya this calendar year. However, we have achieved several landmarks towards reaching our project goals. In last year's field season, we identified six communities in the KWC that are affected by HEC (Figure 1) and conducted introductions with chiefs, village elders, and select farmers. Though our deterrent fencing project has been delayed, we have created GIS maps of the selected villages and the areas of high HEC that are proposed locations for future deterrent fencing. Current conditions in Kenya are not safe to have community gatherings as planned with surveys and a participatory modeling sessions. However, we are awaiting a current Ethics Review permit so that a surrogate can be employed to carry out the sessions as soon as it becomes safe. A seven-page survey has been created, which will capture some of the key information necessary to understand the unique circumstances in each village and inform future plans. Though on-site work has been delayed, we remain ready to proceed with the project as soon as feasible and continue to work from afar towards the goals of the project.

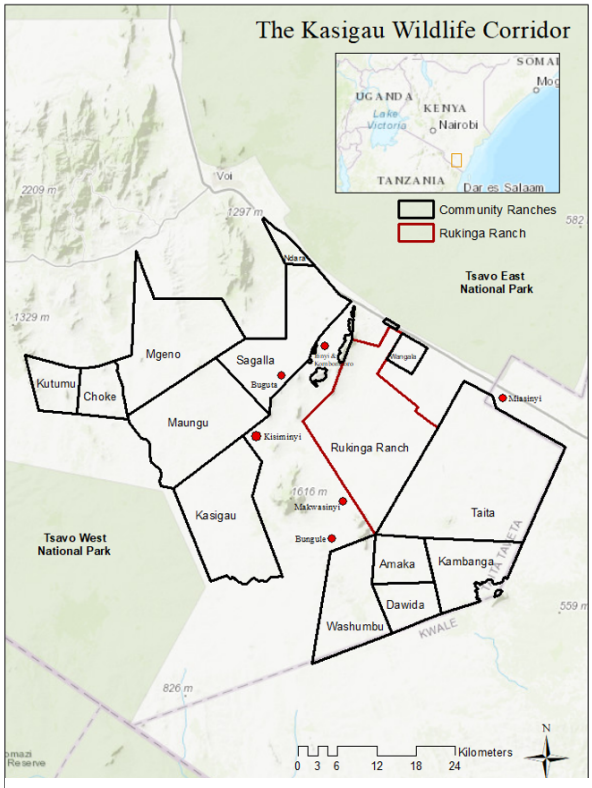


**Figure 1**: The KWC of Kenya and the six villages selected to participate in the study. The corridor is made up of 14 community ranches. The project's research base and home of Wildlife Works is located on Rukinga Ranch.

## Project Goals and Actions Taken

**Goal 1:** To reduce HEC in the KWC by providing Kasaine fences to select areas

Access to Kenya has prevented us from erecting deterrent fences in the six selected villages. However, we have used GIS to identify hot spot areas (Figure 2) where fencing will be placed once we are able to return to Kenya.

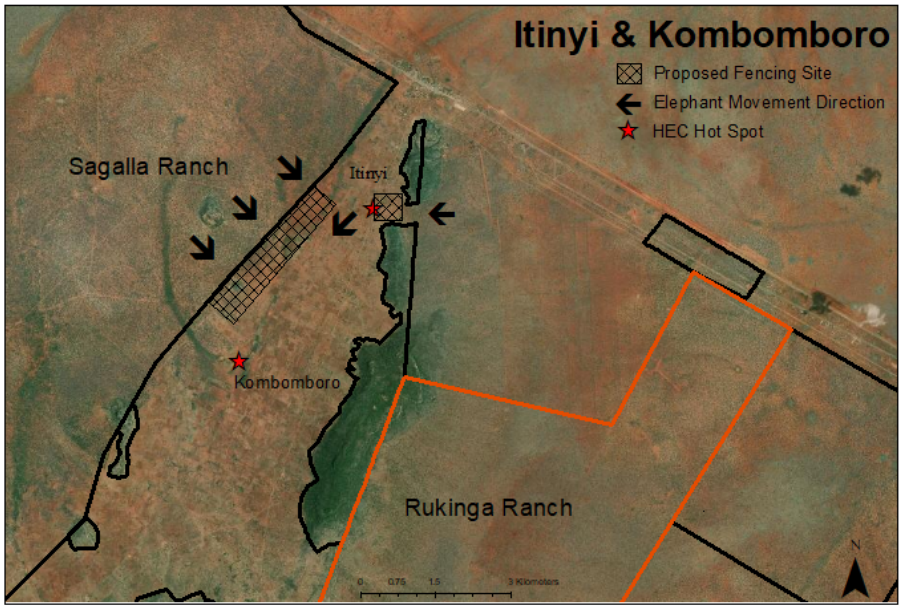


**Figure 2:** An example of a fencing plan for the communities of Itinyi and Kombomboro. The design shows areas of high HEC as identified by local villagers, community ranch boundaries and the direction of elephant movements while raiding.

**Goal 2: Work with communities to devise a customized workshop program**

Our access to conduct a social survey and participatory modeling sessions has been delayed as it is currently unsafe to hold community meetings. However, we have applied for the necessary Ethics Committee permit so that a surrogate may perform the meetings whenever feasible. After receiving the permit (estimated in August) we will complete the Institutional Review Board (IRB) process here in the US. We have designed the survey and Informed Consent information, which will be distributed to the selected villagers.

**Goal 3:** Assessing deterrent efforts and elephant movements across the landscape

This goal ties closely with goal 1 thus, we have been stalled on this effort. However, we have added a new component to this goal and are investigating how the Landscape of Fear (LOF) theory can be incorporated into mitigation designs. This will be an interesting example of how theory can have real-world applications for conservation management.

## Proposal/Activity Changes

Since the advent of the pandemic, we have been unable to conduct any on-the-ground activities as outlined in our original proposal. We have revised part of the budget (see below) to accommodate a required permit and will likely be making other adjustments as the situation is still fluid. Our original proposal is still the intended plan, though the surveys and participatory modeling will likely be conducted by a surrogate. If this is possible, the project

will be able to resume with its original plan and return to on site operations in April/May of 2021.

## Conservation Outcomes

The major outcome we expect from this project for 2020 was the information obtained from surveys and participatory modeling that will hopefully now be conducted by a surrogate as soon as possible. With this information we can proceed with planning the curriculum for the workshops to be delivered in 2021. This also give us the opportunity to create models based on the information from the participatory sessions that will assess the drivers of HEC and allow us to compare any variation between villages.

We anticipate the overall conservation outcomes from our project will be: 1) the reduction of HEC in communities where we conduct the workshop programs and erect deterrent fencing, and 2) an increase in sustainable livelihoods for villagers that participate in and apply the information given in community workshops. These outcomes will be evaluated by measuring the rates of success of deterrent methods and through follow up surveys in the community to assess the efficacy of the workshops.

## Project Impact

The impacts of our project this year are currently unpredictable as we have been unable to initiate any of our in-person initiatives. However, there are 6 villages that will be part of our outreach and the participatory sessions and will have approximately 120 participating farmers. The elephant population in the area is 12,000+ which would benefit from reduced negative encounters with farmers.

## Problems During the Grant Period & Project Success

The Covid-19 pandemic has greatly impacted our ability to perform any in-person activities at the project site in Kenya. However, our team has been actively conducting research from afar and continual planning for resumption of the project. We anticipate that as soon as it is safe to resume activities that the project can still be successful with a delayed timeline (see below).

## Next Steps

Once it is safe to conduct community meetings, we will resume our scheduled survey and participatory modeling sessions in the six rural KWC communities via surrogate. The information gathered from this process can then be transmitted for analysis. The data will be used to construct a curriculum for workshop programs to be delivered in 2021. We can also use this information to create models for the drivers of HEC and complete a peer-reviewed publication. Once interacting directly with community members is safe again, we can begin the construction of deterrent fencing in the selected areas based off of maps created from previously acquired data (Figure 1).

## Human Interest Story

**Figure 3**. A local farmer shows off the slingshot he created to deter elephants.

Last year I accompanied one of the local sub-chiefs, to the village of Kisiminyi to interview some of the farmers in HEC hot spots. I had the distinct pleasure of getting to talk to one elderly farmer (pictured), whose farm is close to the boundaries of two community ranches. He welcomed us to sit in the shade on makeshift benches while he talked about some of his experiences. He said when the corns are high, elephant bulls come every night and he tries to defend his crops. Once, he fell asleep and an elephant came right next to his home. He woke up, startled the elephant, and was chased into his house where he had to stay, fearful till the angry elephant left. He has tried several different methods to prevent elephants from coming near his property, such as the home-made slingshot he showed us (Figure 3). When he puts a stone in the sling and hurls it near the elephants (he made sure to point out that he doesn't try to hit them), the whirring sound scares them away if they don't know he is there. If they see him before he fires, he says the elephants will charge him. He also showed us a makeshift deterrent he had which was a flashlight hanging from a rope (Figure 4). He turns it on at night and says it makes it look like someone is moving through the field with a flashlight when the wind blows it. However, he says he has no money to buy batteries. In fact, everyone we met with that day asked if we had access to flashlights and batteries; the one thing they know that works when on startling elephants. Yet, using flashlights can be very dangerous. When I asked him if he ever considered doing something besides farming, I got a hasty no. He says he loves it and has to plant to feed his family. He said he might scale things back if there was another way to earn money, but obviously farming is deeply ingrained in the culture here. He would love to find less dangerous ways to defend his farm, and make the elephants go elsewhere and eat on the ranches in peace. Farmers like him love their land; he just wishes elephants would find a different place to eat. Hopefully, continuing efforts by conservation initiatives like ours will discover solutions that allow elephants and farmers like our new friend to peacefully coexist.

~Related by Lynn Von Hagen

## Associated Organizations

Auburn University is Lynn Von Hagen's home institution where she is pursuing her PhD and that of Drs. Lepczyk and Zohdy, two of her mentors.

Western Kentucky University is home to Dr. Bruce Schulte, PI on this and the parent project "Elephants and Sustainable Agriculture in Kenya," which also receives support through the Earthwatch Institute and its cadre of citizen scientists.

Wildlife Works is our key research partner in Kenya, represented by Dr. Mwangi Githiru and is the world's largest REDD++ carbon offset program. The company provides resources, personnel, and housing for the project.

Jomo Kenyatta University in Nairobi is home to Dr. Urbanus Mutwiwa, who provides agricultural expertise for the project.

## Project Outputs

The majority of the findings in the project will make up a portion of the PhD dissertation of Lynn Von Hagen to be delivered in the summer of 2022. A minimum of three peer-reviewed publications will result from the dissertation related to this project, with one projected to be completed in 2021.

A presentation at the Human Wildlife Conflict and Coexistence Conference in the UK is slated for September 2020 but will likely be canceled or delivered remotely due to the pandemic.

Other conferences are currently on hold due to travel restrictions from the US.

## Media Coverage

Dr. Schulte and Ms. Von Hagen conducted a webinar series to discuss both projects with the Earthwatch Institute:
https://earthwatch.org/science-matters-webinar-series/elephants-sustainable-agriculture

Auburn University released a research article profiling the team's work in Kenya:
http://ocm.auburn.edu/newsroom/news_articles/2020/05/281326-research-elephant-kenya.php

Ms. Von Hagen did a guest blog post on Women In Stem for the Journal of Comparative Biology and discussed her time in Africa:
https://integrativeandcomparativebiology.wordpress.com/2020/05/12/guest-post-the-lost-generations-of-women-in-stem-and-the-power-of-surprise/

Ms. Von Hagen participated in a podcast late in 2019 discussing the teams research in Kenya:
https://podcasts.apple.com/au/podcast/path-to-coexistence-lessons-from-human-elephant-conflict/id1466193643?i=1000456456223

DOING ANOTHER PODCAST THIS WEEK, WILL ADD HERE

## Social Media

This project shares updates with the parent project on Facebook at: Facebook.com/ElesKenya

Ms. Von Hagen will have a website profiling her research going live in August 2020.
https://www.wix.com/lynnvonhagen
Featured in Earth Live Lessons w/ Lizzie Daily series available on You Tube:
https://www.youtube.com/watch?v=fi0LFk6Vp5g&t=31s

## Project Photos

**Figure 4.** A makeshift deterrent created by a farmer to deter elephants. The flashlight hangs from a tree and spins with the wind. At night when turned on, it can imitate someone walking with a light through the farms

**Figure 5.** A farmer shows us the makeshift shed where some family members sleep in the farm to watch for crop raiding elephants.

**Figure 6.** A bull elephant peers out from the bush on Rukinga Ranch. Males are the predominant crop raiders in the KWC.

**Figure 7.** Two neighboring farmers shared their stories of how farms near areas of refugia for elephants are constantly dealing with crop raids from various wildlife, especially elephants.

**Figure 8.** Farmers often build some type of fence to keep elephants away with whatever material they can find. Elephants recently tore through these metal panels to get to the farmer's corn on the other side.

## Budget

The project budget has changed to accommodate the addition of a required permit and will likely shift again once we are allowed to resume activities due to the pandemic.

| Budget Item | Amount Granted from IEF | Expenditures to Date | Balance Required | Total Project Cost |
|---|---|---|---|---|
| Accommodation per day. $20 @ 85 days | $1100 | | $600 | $1700 |
| Gasoline for Research Vehicle $10 day @ 85 days or vehicle rental | $425 | | $425 | $850 |
| Food/per diem $20 day for 110 days | $0 | | $2200 | $2200 |
| Airfare | $0 | | $1600 | $1600 |
| Community Monitor stipend 6 monitors for 8 months @$60 | $1200 | | $1200 | $2400 |
| Camera traps for farm monitoring 30 cameras @ $150 | $1455 | $1288.47 | $3045 | $4500 |
| Project Vehicle | $0 | | $20,000 | $20,000 |
| In-country travel 6 days @ $50 day | $100 | | $200 | $300 |
| In country transit (trains, taxis) | $120 | | $0 | $120 |
| Fencing materials 30 fences @$100 each | $3,000 | | $0 | $3,000 |
| Ethics committee fee | $300.00 | $300.00 | | |
| **Total** | $8,000.00* | $1588.47 | $27,780 | $37, 680 |

*The project has currently accepted half of the reward ($4K) and the remainder of the funds have been retained by IEF until the project can move forward due to Covid-19 restrictions. Therefore, the current funds retained by the project after expenses are $2411.53

## Revised Timeline

| Activity 2020 | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|
| Literature review & writing | X | X | X | X | X | X |
| Participatory modeling sessions & surveys by surrogate * | ? | ? | ? | ? | ? | ? |
| Model creation, survey processing & manuscript preparation | | | | | X | X |

*Dependent on when it is safe to resume community meetings

| Activity 2021 | Jan | Feb | Mar | April | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Literature review & writing | X | X | X | X | | | | | | | | X |
| Model creation | X | X | | | | | | | | | | |
| Fieldwork in Kenya for data collection & return of volunteer teams | | | | | X | X | X | X | X | X | X | |
| Village workshops | | | | | X | X | X | X | X | X | | |
| Fence construction | | | | | X | X | X | X | X | | | |