



**Monitoring and Conservation of Elephants (*Loxodonta africana*) in Volcanoes
National Park, Rwanda**



Final Report, January 2018

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Original Project Start Date: February 1st, 2018
Project End Date: January 1st, 2019

Final Report

1. Conservation needs addressed

Covering an area of 160 square kilometers, Volcanoes National Park (VNP) is part of a unique trans-boundary network of protected areas in Uganda, the Democratic Republic of Congo and Rwanda. In addition to a number of IUCN red-listed species including the elephants, it is globally important as home of one of only two remaining populations of the endangered Mountain gorilla which is endemic to the Virunga Massif. The park was created in 1925 as the first national park in Africa.

Although several biodiversity surveys have so far been conducted in the Virunga Massif where the VNP is located; it is important to recognize that population of elephants in the VNP has not been systematically counted. Current estimates of elephant population ranging in the park have been made based on the ranger based monitoring (RBM) program method which is a tool that enables the gathering of extensive information on illegal activities, key species of fauna and flora, and habituated and non-habituated groups of gorillas.

This second phase of the project addressed these conservation objectives as follows:

- To support elephant monitoring programme; and
- To stimulate dialogue, gain, and spread knowledge about elephants and human-elephant conflicts around the Volcanoes National Park in order to empower communities living in the vicinity of the park to initiate and manage conservation actions that can lead to their better coexistence with elephants.

For the second part of this project, undertaken activities focused on raising awareness of local community and created community-based approach to protect and conserve the population of elephants ranging in the park as well as to mitigate human-elephant conflicts in and around it. Furthermore, capacity building in terms of training some of the park's rangers was

undertaken to strengthen the ecological monitoring program of the elephants in the park.

2. Project Goals and objectives

The main goal of the project was to support elephant monitoring in VNP and generate solutions on conflicts between humans and elephants in this conservation area. Specifically, the whole project focussed on the following pillars:

- Determine the potential home range of elephants in VNP and the extent of their dispersal outside of the park using ranger based monitoring data(RBM);
- Organize meetings/workshops for mobilizing local leaders and community's support and participation for protection and conservation of the elephants' and their habitat;
- Organize trainings for VNP trackers and rangers to amplify their knowledge, attitudes, behaviour and practices on elephant monitoring.

To meet the aforesaid objectives of this project, for a period of 2 months' project investigators worked with the park management to collect existing monitoring data which enabled us to document patterns of elephant ranging in the park.

Furthermore, different trainings –workshops were organized with park rangers and community members to meet the second and the third objectives.

3. Activities and actions carried out

3.1. Human- elephant conflict Management education sessions

Human – elephant conflict in form of crop raiding, property damage, injuring and killing of people and elephants and creating fear among the local communities pose a great threat to the rural community livelihoods and can frustrate elephant conservation efforts. As such, finding lasting solutions to the recurrent human - elephant conflict is critical in securing the future of

elephants in Volcanoes National Park. In line with the project's objective of creating awareness and educating the local communities about elephants in order to lure them to help support the conservation of elephants and other wildlife in the Park, more community awareness and education sessions were conducted by the project team members in key human elephant conflict (HEC) hotspot areas around Volcanoes National Park.



Figure 1: Participants in the awareness meeting in Nyange

These sessions mainly focused on analyzing the relationship between elephants and communities (human elephant conflicts) living in the vicinity of the Park and looking into interventions used or that could be used to mitigate these conflicts. The sessions brought together a number of community leaders that included representatives of the local authority (Village and Cell leaders), community based organizations representatives (CBOs), women groups, youth groups, cooperative leaders, and conservation education officers (ANICOs). In attendance was also a few community members that

had attended the previous education sessions conducted in first phase of the project.

As has always been the case, the project team members could introduce the project and its main objectives to the participants and emphasize the need for elephant conservation and the role required of them to ensure that elephants are conserved and protected in the Park. Through asking questions and further probing, their knowledge and understanding of human elephant conflict was assessed. These sessions that were mainly interactive in nature, entailed various community leaders giving their narrative on the sources of Human-Elephant conflicts and how communities around the park are coping and addressing these conflicts. Community leaders gave examples of conflict scenarios that have happened in the past like killing of a drunk man, destroying the house of an elderly couple, killing of cows, and displacing the village for a whole week.

On the strategies used to deter elephants from ranging outside the park, the communities indicated that there is a physical barrier (sometimes called the stone wall or the Buffalo wall) which was built by the government of Rwanda's Department of Conservation together with the conservation NGOs operating around the VNP. The community's role is maintaining this physical barrier whenever animals (elephants and buffaloes) break it. However, community leaders say that this strategy has not worked because buffaloes and elephants have continued to break through this stone wall and raiding their crops. They suggest that the stone wall can only be effective in controlling animals ranging outside the Park only if it can be raised and cemented. On this particular issue of the physical barrier, a recent study indicated that though these physical barriers have played a significant role in reducing crop raiding incidences at more than 80%, they have not fully controlled the increasing frequencies of animals ranging outside the Park (RDB, 2016). Community leaders also recommend electrical fencing of the park as a strategy that can stop animals ranging outside the park. Other strategies used as highlighted by the community leaders are the trenches

that were dug by the community members on the belt of the Park, burning of clothes and shoes whose smell chases away the elephants, and shouting and banging empty jerrycans.

On addressing human elephant conflict and conflict with other wildlife in general when they occur, community members noted that the government of Rwanda established a Special Guarantee Fund (SGF) that deals with the compensation of damages by wildlife ranging outside the Park. However, the community leaders are not happy with the way the process of compensation is conducted. Community members say the compensation has always been little and is often not equivalent to their damaged crops and property. They also complain about the time it takes for one to be compensated and the costs incurred while following up compensation matters.

Following these interactive sessions, the project team took time to educate the local leaders about human elephant conflict and how they should participate in promoting coexistence of elephants and communities living in the vicinity of the Park. The project team further stressed that it is the role of the communities in the vicinity of the park to prevent conflicts from occurring by ensuring that elephants exit from the park is reported on time to the responsible authorities so that they are taken back before they could damage crops and vandalize the community property. Community members were further advised to take the lead in protecting their crops from crop raiding animals and ensuring that crop rangers are well facilitated and motivated to do their work of crop protection.



Figure 2: Participants in the awareness meeting in Kinigi

Using Tarangire and Queen Elizabeth National Parks in Tanzania and Uganda as examples, the project Co-Investigator, said that communities around these parks have adopted using beehives fence deterrent method and chili (red pepper) fences and that these strategies have proved to be very effective in deterring elephants. However, we agreed that some of these strategies are not applicable to VNP because of the nature of the landscape and financial implications. Most of the community requested that they should be taken for study/field tours to learn better strategies that can be replicated around Volcanoes National Park with the objective of living and harmoniously coexisting with elephants. These meetings/training sessions climaxed with community leaders promising to work closely with the conservation department to ensure that conflicts with elephants and other animals are prevented and where they occur, they are reported on time.

3.2. Mapping out Human - Elephant Conflict around the Volcanoes National Park

One of the key objectives of the elephant conservation project was to understand the current extent of human elephant conflict around the Volcanoes National Park and propose mitigation measures to reduce it and the related threats to both elephants and humans. To address this objective, we used 2 methods:

- A rapid questionnaire based survey in the local communities living in area adjacent to the Volcanoes National Park i.e. both Kinigi and Nyange sectors whereby questionnaire data were collected.
- Analysis of existing records of elephants' crop – raiding reports archived by the park management for ranger based monitoring data and the compensation scheme.

During these interactive sessions on Human Elephant Conflict (HEC), the community members reported that the major HEC scenarios around the Park are crop destruction/crop raiding, destruction of houses and other properties. They also further noted that elephants kill livestock, wound and kill people and create fear among the local community when they move out of the Park. They also noted that Irish potatoes, Pyrethrum, climbing beans, maize and trees (Eucalyptus) are the major crops damaged or destroyed by elephants when they get out of the Park. Community leaders observed that elephant movements out of the park are largely seasonal. Community members said that elephants generally range out of the park in the months of June and July every year. However, they say that much as they get out of the Park in only two months of the year, one elephant can do the worst damage that can't be compared even to the damage inflicted on crops by 200 buffaloes.

Perceptions and knowledge of elephant crop raiding severity

Community members that we met were asked which animals damaged their crops most frequently and to rank elephant if included according to its perceived severity. The top 5 most cited in order were buffalos, golden monkeys, mountain gorillas, elephants and duiker as illustrated in below. Thereafter, each species was given a score based on their ranking by farmers.

Table 1: Wildlife species reported as being responsible for crop damage by respondents interviewed during the questionnaire survey (n = 50)

Species	# of people reporting it
Buffalo (<i>Cyncerus caffer</i>)	50
G. monkey (<i>Cercopithecus mitis kandti</i>)	37
M. gorilla (<i>Gorilla beringei beringei</i>)	35
Elephant (<i>Loxodonta africana</i>)	31
Duiker (<i>Cephalophus nigrifrons</i>)	22

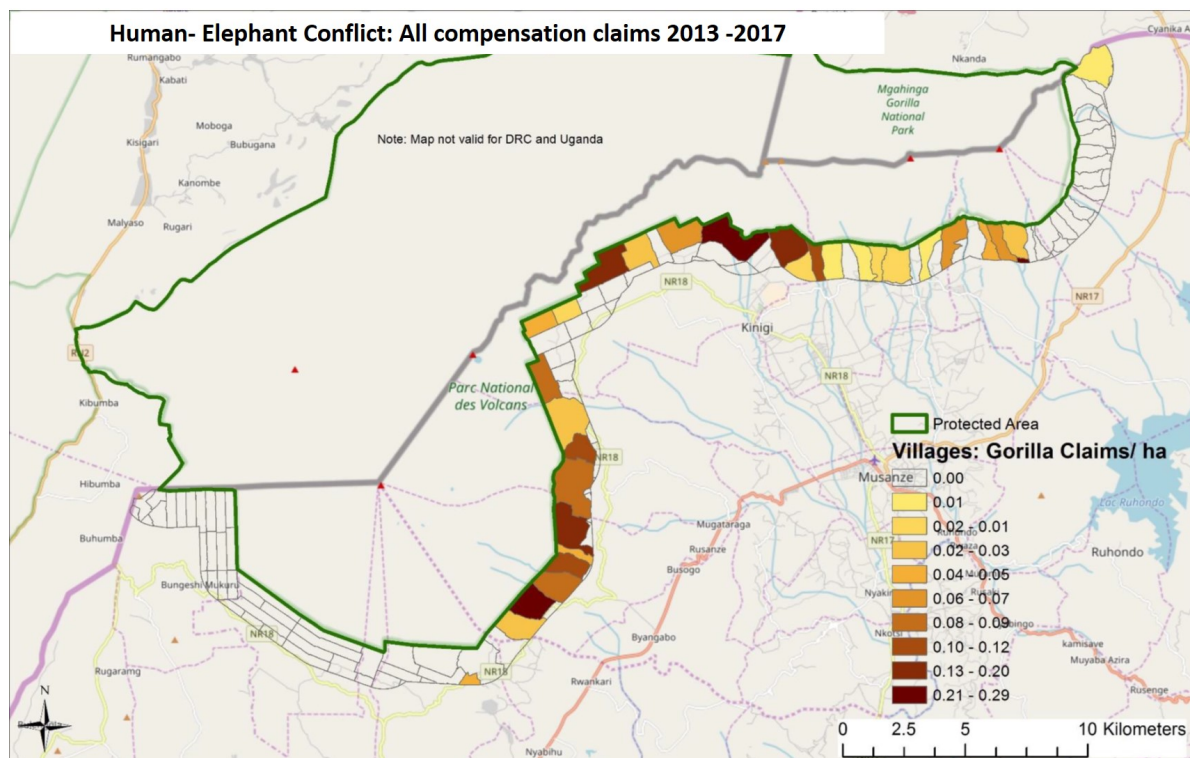
On a positive note, however, the community members indicate that elephants are docile animals and some community members believe that it's a blessing when the elephants move out of the Park because it is regarded as sign that the agricultural productivity will increase.

In buffer areas around the park we examined the density of compensation claims for crop raiding by elephants for a period comprises between 2013 to 2017 and always comparing elephant with other problem animals as summarized in the below table:

Table 2: Summary per year of compensation claims for the period 2013 to 2017.

Species	Year					Grand Total
	2013	2014	2015	2016	2017	
Gorilla	67	39	85	134	72	397
Buffalo	245	118	362	469	291	1485
Bushbuck	1	1	7	10	2	21
Elephant	7		5	6	1	19
Golden Monkey	14	21	8	6	5	54
Unclear	1		1	2	3	7
Grand Total	335	179	468	627	374	1983

Note that these records are not of all crop raiding incidents, but rather of the incidents that resulted in a claim being processed by VNP, and hence these are likely to represent larger scale events causing significant damage in an individual incident. They are likely to under-record ongoing low-level raiding by species such as elephant.



3.3. TRAINING OF VOLCANOES NATIONAL PARK RANGERS' ON SPECIES MONITORING DATA COLLECTION

Field staff of the VNP is mainly composed of the park rangers who, in addition to protecting the park are responsible for gathering of extensive information on illegal activities, key species of fauna (including elephants) and flora. Park rangers were trained and required to help monitor key threats to the park especially those targeting elephants.

Thanks to this training, investigators managed to train 50 Park rangers. Through an intensive 2- day course and practical sessions that were done in the park, park rangers and trackers increased their knowledge and skills on control of animal and their identification, manipulation of field equipment (GPS, Binoculars, compass...).



Figure 4: Park Rangers attending the training

Specifically, on elephant monitoring; trainees obtained theoretical knowledge regarding the elephant monitoring like their identification and number estimation in National park using both direct and indirect methods,

main equipment used in monitoring elephants like collaring techniques, aerial surveys, spoor tracking...

It is expected that skills gained by trackers through this training will contribute in helping them to perform routine ecological monitoring activities and provide timely and accurate information to park authorities in order to monitor trends in presence of elephant population and make informed related management decisions.

4. Conservation Outcomes

Community members in community based conservation cooperatives from 7 cells in 2 sectors (Nyange and Kinigi) in Musanze district are actively involved in the conservation and protection of VNP elephants especially when they range outside of the park. This was achieved thanks to the intensive awareness raising and community conservation education sessions that were held during the implementation of this project. In addition, no any poaching and retaliatory killing of elephant were recorded during the period of the project implementation. Members of community based conservation cooperatives that operate in Kinigi and Nyange sectors, the area that was targeted by this project committed to start being involved together with park staffs and local leaders in the safely and friendly chasing of elephants when they will be ranging outsides of the national park boundary and to serve as liaison in the conservation education of other people for the avoiding of harmful activities of elephants.



Figure 5&6: An elephant pictured in a deep ravine in VNP and an elephant pictured by a Camera trap in the VNP

5. Impact of the project to the humans/ communities

This second part of the project implementation directly impacted on 60 people in three following categories:

- 30 members of local communities benefited on elephant conservation from different awareness meetings that were organized;
- Among the people that were targeted by the awareness meetings there are 10 local leaders at the village and cell level. This category was targeted because they are the ones who often deals with the management of human-elephant conflict related problems
- 25 people among the park staffs in ecological monitoring department, law enforcement (rangers and trackers) and community conservation have also benefited from the project especially in trainings that aimed at building their capacity in elephant monitoring.

Generally, local communities in the target area will be able to save crops and their property from elephant depredation due to timely control and reporting to the park management. The herd of approximately 75 elephants that ranges in the Volcanoes National Park is the major beneficiary of the project implementation.

6. Problems encountered

On the ground, problems associated to the conservation of elephants that were encountered are crop damage and severe property especially damage by elephants were faced during the period of the project. Regarding the project implementation, there were no major problems encountered. However, as mentioned in the interim report, in most cases, the team was obliged to be flexible on workshops and training schedules due to other on-going programs and scheduled activities by the Park management.

7. Level of project success

The implementation of this project was a success. Trained trackers are expected to improve the way of tracking elephants in the park and this will allow scientists, conservationists and park managers to get a clear idea of numbers, spatial – temporal distribution patterns, threats to them and so on. In addition to contributing in knowing the current home range of elephants in the Volcanoes National Park, it is obvious that the implementation of this project contributed in showing that elephants are important animals for the VNP ecosystem but human -elephant conflict in the area adjacent to the VNP is a problem that needed solutions. This information assists in the protection of these animals and the accurate control over their numbers and general well-being. However, it is important to note that the project was the first of its kind in the park and didn't cover all 12 administrative sectors bordering the park. Concerning the training, it was implemented in a considerably small number of the park's rangers and trackers.

8. Next step for this project

Being the first project that advocated for the protection and conservation of elephants in the park, it won't be put aside. The team will continue searching more funds for a continuous monitoring through collection of robust data on the population, especially on their ranging and feeding ecology as well as conflict. Furthermore, local community education on the importance of elephant conservation will form the integral part of the project in the future.

9. Human interest story

The human interest story that arise in the second phase of this elephant conservation project is one of a Villager in Nyange sector who told us a story of 4 elephants that visited their home 3 years ago. That time the family had prepared the sorghum beer and there was a sharing of the beer with relatives in their grass thatched house. Suddenly, they were surprised by seeing the tusk of one of the elephants entering the house from the upper

wooden walls of the hut and targeting the container of the sorghum beer. Normally, elephants are attracted by alcoholic drinks!! Family members cried to chase the elephants in vain until they were advised by their neighbours who were remotely observing the scene to make their goats screaming as they know that elephants fear a screaming voice.

500 Word summary

Elephants, like other wildlife of the Volcanoes National Park (VNP), require a particular consideration in the park's management conservation activities. Their habitat is prone to poaching and other illegal activities though considered to be subsistence based, driven by poverty and hunger, and people poaches for basic survival. Now, around 70 elephants are in VNP. However, no specific monitoring program exists in the Park. Elephants are involved in human-wildlife conflicts and the impact they cause to neighbouring communities is enormous. Direct wildlife damage including elephants is commonly the main driver of Human-Wildlife conflict. With the prevailing situation, there are evidences which show that elephants, like other animals in the park are at risk of revengeful activities once they range out of protected areas. In addition, Community members around the park are not informed and well educated about elephant conservation and current best methods of human-elephant conflict management.

With the above background, it was imperative to train 50 park rangers to support the park management in equipping the field staff with minimum required skills in monitoring elephant population. With the support of the International elephant foundation, elephant conservation and monitoring trainings were held for VNP rangers and trackers. Acquired skills will contribute in helping them to perform their routine ecological monitoring activities and provide timely, accurate information to park authorities in order to track trends in presence of elephant population and make informed related management decisions. In line with the project's objective of creating awareness and educating the local community about elephants in order to

lure them to help support the conservation of elephants and other wildlife in the Park, more community awareness and education sessions were conducted by the project team members in key human elephant conflict (HEC) hotspot areas around Volcanoes National Park.

10. Organizations associated with this project

- Department of Conservation – Rwanda Development Board

The department of conservation is the government department dealing with the management of all national parks and wildlife in Rwanda. Rwanda Development Board granted permit to the project team to undertake all project activities and Volcanoes National Park's wardens were involved in the project implementation.

- Mountain Gorilla Veterinary Project - Gorilla Doctors

During the trainings of rangers, we benefited from the expertise from the wildlife veterinarians who touched on the aspect of monitoring and reporting health of animals including elephants as well. Dr Julius Nziza, one of the project team is affiliated to Gorilla Doctors.

- Community Conservation Cooperatives around VNP

Leaders of cooperatives and local leaders of entities around the Volcanoes National Park in Kinigi and Nyange sectors were very collaborative especially in organizing meetings with community members.

11. Budget Execution

No	Activity item	Quantity	Price Per	Total
1	Transport fees and perdiem for Park rangers staff training	2 training of 20 individuals each were organized	\$ 25	\$ 1000
2	Transport fees for Community members during sensitization workshops	2 workshops X 30 individuals each were undertaken	\$ 25	\$ 1500
3	Local Leaders sensitization workshops	10 individuals from local administrative entities 3 attended sensitization campaigns	\$25	\$750
4	Investigators perdiem	12 working days X 3 investigators	\$ 30	\$ 1080
5	Hiring a car for use by investigators in mobilization	1 car for 15 working days	\$ 40	600
6	Communication and video editing			\$ 60
7	Bank account maintenance fees			45
	Total			\$5035
	Balance to date			15