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COLLABORATIVE MANAGEMENT OF WILDLIFE FOR PROMOTION OF TOURISM IN AFRICA: A CASE OF SEMULIKI NATIONAL PARK, WESTERN UGANDA

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Abstract : Collaborative management of natural resources has overtime received overwhelming support in developing countries after decades of colonial preservative approach. It is considered as the most appropriate management practice for all-natural resources including wildlife resources. The aim of this study was to identify the management strategies used and their performance in promoting sustainability of wildlife and tourism around Semuliki National Park, South Western Uganda. Across-sectional research design was used in the study. Methods of data collection included interviews, focus group discussions, observation, questionnaires and document review. A sample of 199 households living around the protected area were randomly and selected. The key informants were purposively selected. The findings indicated that strategies used in the area included : resource harvesting, problem animal management and land use planning, revenue sharing and sensitization. The local communities perceived resource harvesting, land use planning and problem animal management as the most effective strategies in managing the protected area. The community appreciated that some success had been recorded and these include among others ; reducing encroachment to the protected area and illegal resources harvesting, and improvement in park–community relationship. However, the problem animal management strategies had not performed well and therefore affecting sustainable wildlife management and tourism development in the area. This calls for reassessment of the strategy with the aim of strengthening community involvement in the management of the protected area. It was concluded that there a mix in the perception of the community around the protected area as far as collaborative management was concerned. Many believe that their level of participation is mainly passive though there is small level active involvement and participation. It was recommended that the participation of local communities need to be enhanced and the successful strategies should be strengthened and cascaded to other protected areas in the country and in Africa as a whole.

Keywords: collaborative management, natural resources, wildlife, management strategies and tourism

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INTRODUCTION

Background

Collaborative management refers in general, to efforts that bring together all stakeholders with diverse influence and experience to bargain and seek a way of reconciling their conflicting interests. It is an approach to natural resources management that works well due to the failure of uncertainty and complex, conventional administrative and court processes that have failed to produce satisfactory results (Hossu et al., 2018). It is also called co-management or collaborative governance in public administration (Sentanu et al., 2023, Reina-usaga, 2024, Lukman et al., 2024, & Westberg et al., 2024). Some or all the stakeholders like local communities, private and public institutions around any natural resources are involved in the management. The involvement of communities enhances tourism and fosters agreement between the conservation authorities and local resource user groups for effective management of a certain resource or resources at the same time meeting the livelihoods of the local people. It also promotes tourism sustainability especially with the application of coastal ecosystem service approach (Sholeha & Sumarmi, 2025; Foggin, 2012).

In developing countries, the original model of managing national parks (NP) during and postcolonial era was through the use of the existing colonial administrative structure that involved policies made by top administrators and passed on to the lower structures for implementation (Mwesigye, 2012; Kagwana & Mako, 1997). Therefore, there was lack of awareness about the importance of wildlife. The restricted access to resources by park authorities led to negative perceptions towards wildlife conservation. This phenomenon created a fertile ground for conflicts between the park authorities and the local communities living near them (Spierenburg, 2002). In 1970 and 1980s there was widespread degradation of forests and wildlife in the developing countries due to increased population, political instability, inadequate

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technical staff and insufficient funding of the concerned departments. This led to increased illegal activities like poaching and destruction of wildlife (United Nations Environmental Programme [UNEP], 2013).

The exclusion of the local people created resentment among them and reduced the effectiveness of conservation practices. This contributed to the re-occurrence of illegal activities. The ineffectiveness of the protective model led to the introduction of a new approach that puts emphasis on the involvement of the local people in the management of the Protected Areas (PA) and tourism (Saito, 2007). In the 1980s, community led conservation and development approaches were spearheaded with support from international agencies such as the United Nations Educational Scientific Cultural Organization (UNESCO), donors, Non-Government Organizations (NGOs) with the effort to link sustainable use of resources and conservation of the biodiversity and to improve rural livelihoods (Khwaja, 2004).

One such approach meant to mitigate conflicts between the local communities and conservation entities is collaborative management which emphases access for communities to key ecosystem services and economic benefits (Fynn et al., 2016; Kansky, 2022). The rationale behind collaborative approach is that by working together, people are able to share knowledge and achieve more than organizations working on their own. Involving affected communities is likely to induce cooperation by the local people towards conservation activities and more acceptable solutions (Forgie et al., 2001). The desired outcomes such as increased awareness about wildlife programs, rural development, eco-tourism, land use planning, good park - community relationships, diverse exchange of knowledge and improved livelihood can in turn propel the local people's positive perception towards biodiversity conservation (Livingstone et al., 2024; Ferrie et al., 2011). This is a generalization, because it does not apply everywhere. Nevertheless, community support significantly improves the chances of sustainable resource management (Wu & Singh, 2024). Globally, a number of management plans have been put in place in an attempt to conserve wildlife through involving local communities in wildlife conservation. Such strategies have been adopted by several countries for example: Nepal, Brazil, Pakistan and India. In parts of the world, governments established a variety of programs for example: creation of buffer zones, regular resource harvesting, establishment of Community Based Anti-Poaching Units (CBAPUs), awareness programs, regular conduct of wildlife population and habitant assessment in order to manage wildlife and tourism sustainably (Poudel, 2018; Fatina et al., 2024).

In Africa many countries have adopted the methodology of Collaborative Wildlife Management (CWM). Among others they include Communal Area Management Program for Indigenous Resources (CAMPFIRE) in Zimbabwe, Administration Management Design for Game Management (ADMADE) in Zambia and Community Based Natural Resource Management {CBNRM] in Botswana (Mbaiwa, 1999). In Zimbabwe it involves the sale of rights to wildlife enterprise who in turn market safaris to hunters and eco-tourists. It was designed specifically to stimulate the management and sustainable use of resources in Zimbabwe's communal farming areas. Resident communities were given custody over responsibility for managing wildlife resources and the right to benefit directly from their use (Marunda & Chaneta, 2014).

However, in Malawi, the system created powerful groups which marginalized the weak (Zuka & Zuka, 2024). This contrast with principles of collaborative management. It has led to exclusion of some members of the community. In East Africa community programs have been implemented in Kenya under the Kenya Wildlife Services (KWS) and Tanzania under Tanzania National Park Authority (TANAPA). In Tanzania the Protected Area Outreach Initiatives were developed by TANAPA in the management of NP areas like, Tarangire and Serengeti NP.

The policy promotes wildlife management at village level by allowing rural communities and private land holders to manage wildlife and land for their own benefit. These areas always act as buffer zones around the NP which can increase wildlife habitat along borders and keep human activities away from the park (Wilfred, 2010).

In Uganda, CWM started from the forest reserve conservation in Bwindi Impenetrable Forest in 1988 (Namara, 2006). In 1996 it was implemented in Mountain Elgon National Park (MENP) among others. The program was carried out in support of Mountain Elgon Conservation and Development Projects and World Conservation Union (IUCN) in conjunction with other institutions that provided technical support (Chhetri et al., 2003). All conservation authorities in the country have adopted the CWM approach in their management plans to enhance natural resource sustainability (UWA, 2014). But the limited funds from protected area authorities to implement the revenue sharing principle has made the local communities to develop resentments hence limiting sustainability of resource management and tourism (Twinamatsiko et al., 2024).

The emergence and rapid growth of tourism models like: ecotourism, sustainable tourism, ecological and nature-based tourism as a shift towards environmentally and culturally conscious forms of tourism have increased tourism flows and consequently increased anthropogenic impacts on the ecosystems of natural areas (Esparza-Huamanchumo et al., 2024; Artemyeva et al., 2025). Therefore, is need to develop ecotourism that requires specialised green parks with aim of attaining green economy (Gulnur & Kamshat, 2025). The management of Semuliki National Park (SNP) adopted Collaborative management in 1996 when the government of Uganda realized that without local people involvement, management of wildlife would be very difficult. It was formally implemented through a program called Collaborative Resource Management (CRM) rolled out in 1997 following the enactment of UWA's statute of 1996 that recognized local people's contribution to conservation and management of park resources (The Constitution of Republic of Uganda 1995).

Collaboration functions in protected areas are increasingly popular for tourism as well as providing livelihood support for the surrounding communities, they also improve on the sharing problems and developing common ground to capture prospects for tourism (Birendra, 2024). However, in Uganda, since the adoption of collaborative management approach in the 1990s, the protected areas have experienced challenges such as: unclear and irregular maintenance of some parts of the boundaries, invasive tree species, poaching and illegal harvesting of resources, inadequate parameters to monitor resource use, inadequate revenue share, inadequate awareness programs and insurgency caused by intermittent rebel attacks to tourist and tourism infrastructure (Chege, et al., 2002; Mackenzie, 2012, UWA, 2017; Barrow et al., 2003; Twinamatsiko et

al., 2024; Iradunkunda, 2021). These conditions have created the need for re-evaluation of the existing collaborative management approach with a view of addressing the unresolved challenges that limit the subsequent change of perceptions of the local people towards wildlife management. It is therefore, against this background that this study was conducted. The aim of this study was to identify the collaborative strategies used in managing wildlife and tourism and to assess the effectiveness of these strategies in promoting sustainable wildlife and tourism around Semuliki National Park.

METHODOLOGY

1. Description of the study area

Semuliki National Park is located in Bundbugyo district, Bwamba and Bughendera counties. It covers an area of 220km^2. The Park lies on the border of Uganda-Democratic Republic of Congo (DRC) within the western arm of East African rift valley. It stretches 00^o 44^o- 00^o 53^o N, 29^o 57^o- 30^o 11^{o}E. It is surrounded by five sub counties that is Bubukwanga, Burondo, Ntandi Town council, Ntotoro and Tokwe (Bundubugyo local government, 2017).

It is bordered by the Rwenzori Mountain ranges on the south east, Democratic Republic of Congo to the west, Toro-Semuliki wildlife reserve, Rwangara community wildlife reserve and Lake Albert in the north east. The collaborative zone consists of two kilometers (2km) wide strip along the boundary in the areas surrounded by the Ugandan communities.

It overlaps the restoration zone parts at Ntandi and Bumaga. The restoration zone is the area infested by the invasive species along Fort-Portal Bundibugyo Road (UWA, 2017). The park comprises of sedimentary rocks deposit that have produced alluvial clay soil with alkaline (pH > 8.0) and are infertile. It occupies a flat, gently sloping undulating relief ranging from 670 – 750 metres above sea level with approximately 10 km^2 lying above 750 meters. The Park is drained by various rivers such Semuliki, Lamia, Tokwe, Nyahuka, Rwigo and Kirumia. Other drainage features include: the female, the male and son hot springs, the warm lake and ox- bow lakes (UWA, 2017). The area experiences a bimodal rainfall pattern.

The annual rainfall is 800 mm-1600 mm with an average of 1250 mm which is mainly influenced by altitude. The annual mean temperature ranges from 18^{o}C to 30^{o}C maximum with relatively small range (UBOS, 2012). The park is the only low lying natural high forest in Uganda. The forest is moist and semi deciduous, dominated with a hard iron wood tree species (*Cynometra Alexandrii),* savannah grass land vegetation to the north-east, swamp vegetation along river Semuliki and towards Lake Albert. There are various tree species recorded in SNP, some species are restricted, endemic and others are endangered.

The endangered species includes: Muvule, Mahogany and Loviasppcordia SSP. The restricted species includes: Euphorbia SSP, *Chrysophyllum Begui, Ficus Vogeliana, Nauclea Diderrichii, Nesogordonia Kabingaensis, Isolania Congolana, Baphia Capparidifolia, Nauclea Diderrichii, Lecaniodiscus Cupaniodes, Afzelia Bipindensis, Millettia Eetvldeania, Millettia Psilopetala and Eleais Guineensis* (UWA, 2017). The Park is a home of variety of mammals such as the African Elephants, African Buffalos, Chimpanzee, Hippopotamus, Crocodile, Leopard, Lowland Bong, Baboons, Okapi and Wild Pig.

A map of Semuliki National Park showing the study area (Figure 1). Species such as Mona Monkey, Forest Buffalo, Bay Duiker, Bee-Crofts, Flying-squirrel, Pygmy Flying-squirrels, little collared Fruit Bat, Water Chevrotain and target Rat occur nowhere in East Africa. While species such as Dwary Honey and Purple Breasted Sunbird are endemic. Reptiles and amphibians are also abundant (UWA, 2017). The Park has a habitant of 400 bird species of which the White-Tailed Hombill, Capuchin, Babbler Blue headed Crested Flycatcher and the Orange Weaver are of limited ranges (UWA, 2017).

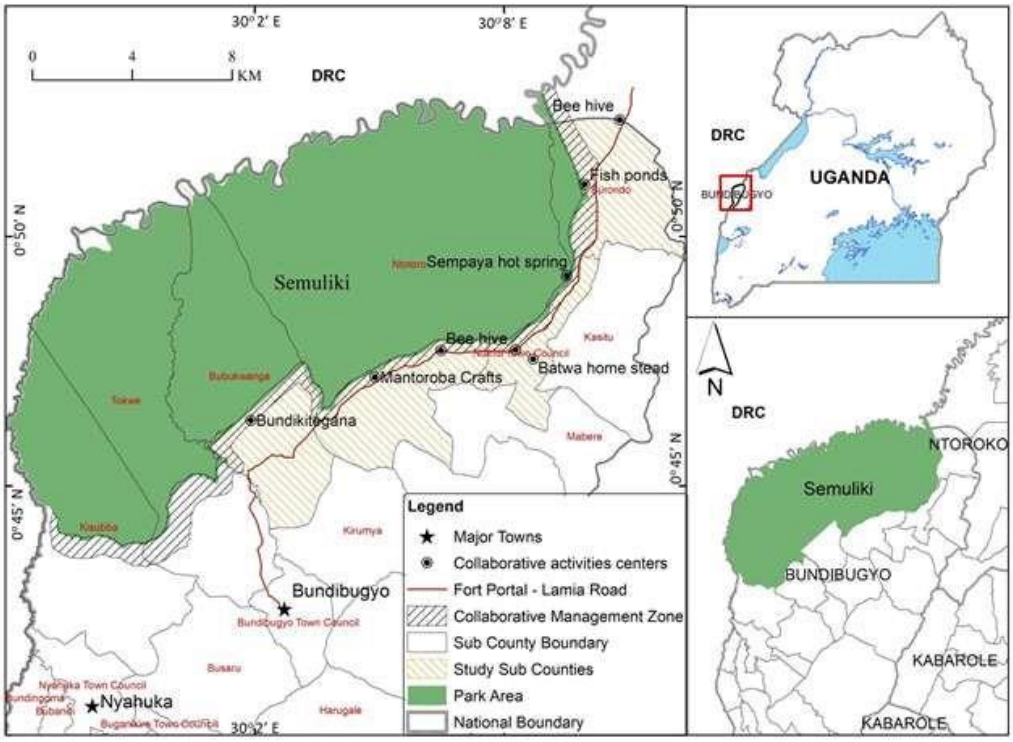

Figure 1. Location of the study area Sources: UBOS, Google Earth engine and field survey 2019 and UWA, Geographical survey 2019

2. Research design and sample size

A cross-sectional research design was used in the study. Out of five sub counties surrounding the park four were selected for the study and two parishes adjacent to the park was selected purposively. Information was got from different community groups in the area. They included: the resource users like the Bamaga anti–poaching group, Mantoroba Rattan cane users, the Batwa indigenous group, Mantoroba MDD group and Burondo farmer group.

The local community leaders and the Warden Community Conservation of SNP (WCCSNP) were also interviewed. Both qualitative and quantitative methods were used. Structured and unstructured questionnaires were used to collect data, and in-depth interviews were also administered to key informants to express their experience regarding CWM. The data were processed using descriptive and exploratory approach. A total of 199 household heads were selected from a population of 398 households using Taro Yamani 1964 formula. The methods of data collection included: questionnaire administered to household heads and community leaders, interviews with resource user community groups, observations and document review. The Methodological flow of the study is presented in Figure 2.

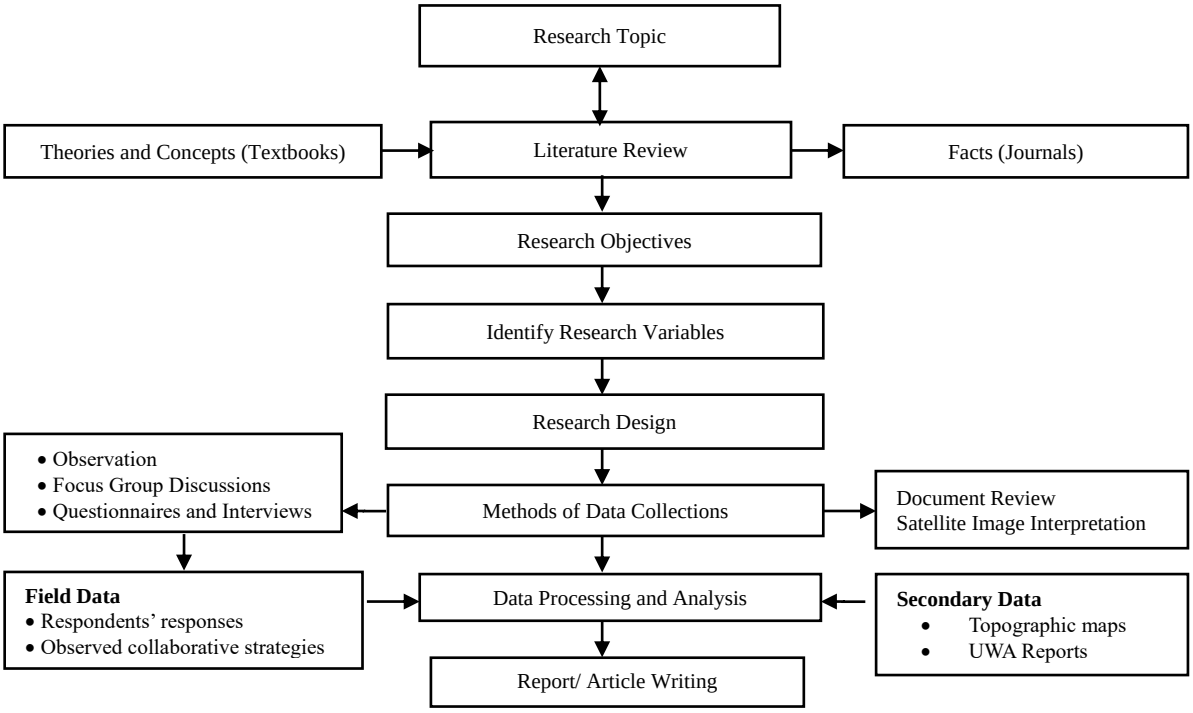

Figure 2. Flowchart for the methodology followed in the study

RESULTS

1. Collaborative strategies used in the study area

The collaborative strategies that were identified in the study area included: problem management strategy, land use planning strategy, revenue sharing and community sensitization strategy. Within these strategies, there were activities that were being implemented in the local communities around the protected area.

2. Problem Animal Management Strategy

The aim of problem management strategy was to reduce the frequency of problem animals to destroying crop, attack livestock, injure or even kill people. The animals that were identified under this group included elephants, buffalos, bush pigs, baboons and vervet monkeys. The activities under this strategy included: scare shooting, planting of Mauritius thorn hedges (*Ceasalpanea Decapitate*) along the boundary and erection of elephant deterrent board walk, planting other unpalatable crops like hot paper and agroforestry trees to create a buffer zone. Mauritius thorn hedges (*Ceasalpanea Decapitate*) planted along the park boundaries were able to deter wild animals from invading the community lands.

This project was funded by Kibale Semuliki Conservation Development Project (KSCDP) and World Vision. Local communities living near the park provided the labour and were only paid an allowance of 0.44 US dollars per day towards their labour contribution and a lunch allowance of 0.11 US dollars every day. Examples of these hedges are presented in Figures 3a and 3b in Burondo parish; Burondo II village. The hedge in Figure 3a is well maintained and has thorns that can deter animal while one in 3b has no thorns and animal can easily go through to the gardens. Besides the Mauritius thorn hedge, the farmers are also encouraged to plant unpalatable crops to problem animals like hot paper around the park.

Many problem animals do not eat the hot paper plants and fruits. These scare them away. Some of the local communities were allowed to grow eucalyptus trees in the buffer zone which they are allowed to harvest when they mature. Another activity under problem animal management strategy was scare shooting. This is an emergency activity which was carried out by park rangers after the local people reporting cases of invasion by elephants or buffalos. Local people are supposed to report to the local councils who alerts the WCCSNP before scare shooting was carried out in order not to cause panic in the community.

Figure 3a. Mauritius thorn hedges in good conditions

Figure 3b. Lacking Mauritius thorn hedges (Source: Field data)

There were also elephant deterrent boards erected by national park management. These can deter elephants from crossing to the garden. Beehives are put on these boards and wires are connected to the beehives such that when the elephants hit the wires the bees buzz, which scares the elephants from crossing into the community. On average deterrent covers a distance of one kilometer (1km) in Ntotoro Sub County and one and a half kilometer (1½) in Ntandi Sub County.

Field observations revealed that, the board walk way in areas of Bubulongu village Ntotoro sub county are in good conditions (Figure 4a) but in a few isolated cases were found destroyed (Figure 4b). In the same line the beehives were not in existence as the bees had swarmed away and the hives lay in pieces.

Figure 4a. Elephant deterrent in good conditions

Figure 4b. Elephant deterrent in bad conditions deterrent (Source: Field data)

3. Land use Planning

Land use planning as a collaborative management strategy in Semulik National Park involved the repositioning and demarcating the park boundaries. The aim of land use is to control and minimize land disputes but also facilitate law enforcement. Besides planting Mauritius thorn hedges, the community was also encouraged to establish buffer zone by planting acacia and eucalyptus trees and erecting pillars at agreed points.

Trees such as; Maesposis (*Maesposis Eminaii)*, silk oak (*Grevilla Robasta*), albizia (*Albizia Zgyia*), timer markhania (*Markhania Platycalptus*), cordia (*Cordia Milenis*), calliandra (*Calliandra Calathynsus Eqasetiyalia*), crota (*Crota Maaestch*), terminalia (*Termalia Superba*), sesbaia (*Sesbania Sesban)* and fig tree (*Ficus Nantalensis*) are planted in the cocoa farms in all the sub counties surrounding the park. This has promoted agroforestry and reduced pressure on the protected area for firewood. Unpalatable crops like chili are also planted to deter animals and farmers can earn income.

4. Revenue Sharing

The National Park annual reports 2014-2018 indicates that, the local communities living near and around the park got 20% of the tourism entry fee. The aim was to enable the local people living adjacent the park to invest in sustainable activities that would reduce illegal activities in the park. A total of about 60 million Uganda shilling (over USD 165,961) was given to existing projects in Bundibugyo District in the financial year 2017-2018. The sub-counties that benefited included; Bubukwanga, Ntoroko, Ntandi town council, Burondo, Tokwe and Kisuba.

The projects that benefited in that financial year included; Beekeeping, agroforestry, and goat keeping. Some other projects had benefited from this strategy in the previous years. they included; art and craft (skill training) and tree planting by the Mantoroba, Rattan cane group, fish farming in Bubulongu, farmers development group in Ntotoro Sub County and the Bamaga cultural group (Ant-poaching group) in Ntandi town council.

4.5 Effects of collaborative strategies in the area

Opinions of the local people were sought on the effectiveness and benefits of the strategies used in collaborative wildlife management around SNP from the communities and technical staff of the park. The results are presented in Figure 5.

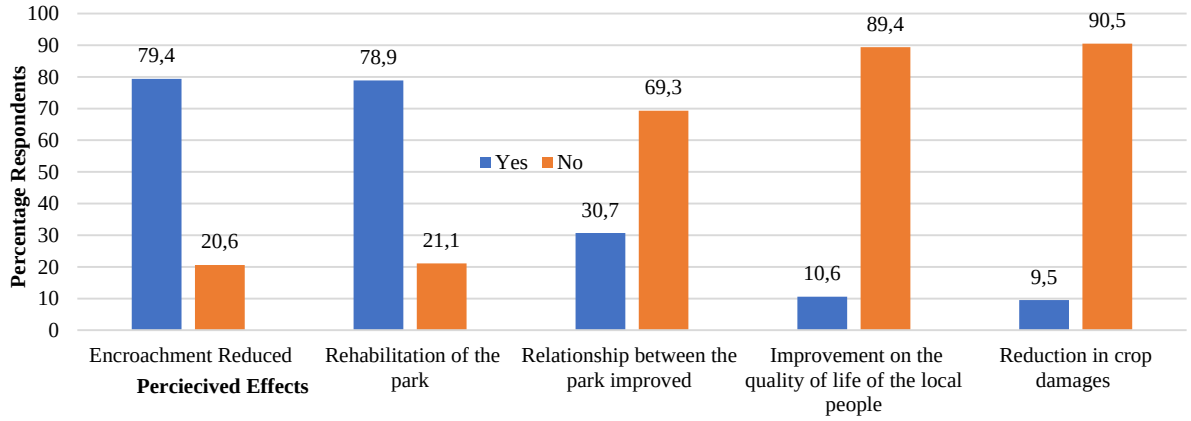

Figure 5. Perceived Effects of Collaborative Managrmrnt by communities (N=199) (Source: field data 2019)

Figure 5 shows that, 79.4% of the community indicated that collaborative approach had helped to reduce encroachment on the park. Developing agroforestry by planting of trees and woodlots by local people has helped to reduce encroachment on the park. The local people are involved in maintaining the boundaries and this has motivated them to reduce on the encroachment. Where buffer zones agroforestry is absent, alternative land uses such as unpalatable crops like chili had been used to reduce crop damages. A resource user in Ntandi town council noted the unfair treatment is still existing among the resource managers. He stated that: "*Wildlife officials* (*UWA) care more about wild animals. When a ranger finds you on the side of the park they harass, cane or make you pay fine or arrest you but when wild animals destroy your crops the park does nothing. Many young people have been sent in prison because of green pigeons (kapapala)".*

It was established that the local people who are involved in growing woodlots had benefited through sale of trees for poles, fodder crops and firewood. This had improved on their incomes and general livelihoods. It was also noted that some trees planted in agroforestry around the park are medicinal (herbs). For example, the eucalyptus trees used in the treatment of flu and regulation of blood circulation and Albizia Zgyia (*mulongo*) which heals stomach pain and tooth ache.

However, there was resentment by some local community members planting more trees because it was increasing on the area for the wildlife to cross to their gardens. Collaborative strategies had enabled the protection and rehabilitation of the park (79.9%). Collaborative activities included; removal of invasive tree species of (exotic trees), maintenance of the board walk and construction of the trails. The local people were involved in the felling of the invasive tree species (exotic trees) and noninvasive trees for timber such as; *Terminalia Superbia*, *Senna Spectabilis*, Senna *Siamea*, and *Cedrella Ordurata* around the park boundaries. The local communities are also involved in the de-barking of selected exotic trees, up root young wildling and sapling of the exotic trees. The youth are involved in the maintenance and rehabilitation of the board walk to the female and male hot springs and maintaining the trails used for forest nature walk and bird watching around Sempaya area. It was revealed that boggy conditions and the seasonal floods lead to continuous decay of the wood thus regular maintenance. These activities have promoted tourism in the protected area.

Regulated resource harvesting strategy has reduced tension between the National Park and the local community. The resource users such as the rattan cane users and the Bamaga anti-poaching unit volunteers to monitor resource harvesting through reporting of illegal activities. They also report unknown people found in the park, remove snares, hunting traps and arrest offenders. The warden confirmed by availing data on damaged snares, wild wires and bird net snares. It was established that illegal activities in the protected area were on decline. This can be observed in Figure 6. However, there is a challenge in that during the harvesting days the number of people in most cases was more than the agreed upon and this causes tension.

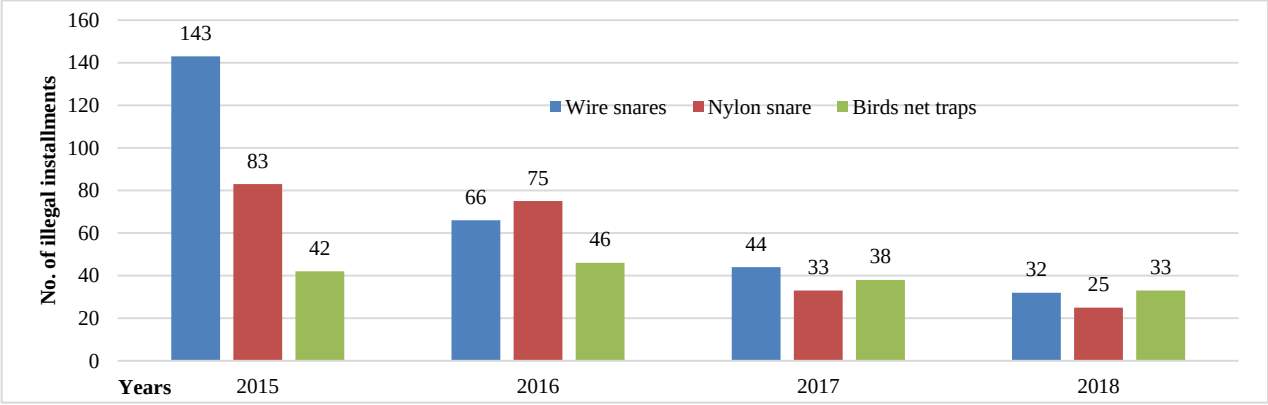

Figure 6. Trends in illegal activities in the park between 2015 to 2018 (Source: UWA Annual Reports 2015 to 2018)

Although the local people have benefited from resource harvesting, they still have negative perceptions towards the monthly subscription fee, Uganda shillings 25,000 (Ugx 2500) for rattan cane users and Ugx, 1000 for fire wood which

restricts them from accessing the resources in park even on the days when they are supposed to harvest resources. The long process required to get permit to harvest timer and the corruption by rangers have increased the negative perception of the community towards the protection of the resources. As far as improvement on livelihoods of the local communities is concerned, it was established that it had generally improved. During FGD with Community groups, they indicated that they had benefited from the revenue sharing arrangement. An interview with the secretary of the rattan cane users said that;

"Art and craft project had helped to develop skill that had enabled them to create employment which provides an alternative source of income. Through making furniture they are able to pay tuition fee for their children at the university."

Chairperson of rattan cane users said that:

"He was able to acquire land and plant woodlot (Eucalyptus trees) which provides timber, fire wood and medicinal herbs. This has increased our income through sale of furniture, timber and timber products".

The anti-poaching and the farmers group were happy with the fish farming projects which they were soon going to start harvesting. This was going to improve on their diet and income. However, there were groups which had not benefited in the revenue projects claiming funds were limited to make meaningful investment.

Due to lack of sensitization and training, the established projects had failed. For example, goat rearing in Ntandi sub county which were sold off and bee-keeping in Burondo sub county. A member of the Burondo11 farms group explained *that*;

"Provision of the bee-hives was not followed by provision of equipment like the protective gears such as gloves and helmets. this discouraged the farmers from caring for the bees."

It was also established that revenue share was too small and irregular. Not all villages around the park had the MoU to share the revenue in a given period. This was confirmed by the park authority that they keep on alternating the villages because they receive less revenue due to few tourists that visit the park. This was compounded by insecurity that scare the tourists away.

This situation undermines sustainability of collaborative management approach. Some members of the local community feel the revenue share benefit the sub county officials. They feel the revenue share has not helped to improve the quality of life.

A member of resource user indicated the following;

"we are living in poverty. My family only has one meal a day, sometimes we take porridge because all the crops grown are destroyed by the wild animals. We buy food from other areas. If you have no money, you cannot eat".

However, some local communities had benefited from free tap water supply. This included communities like Ntandi, Burondo and Ntotoro Sub Counties. The rivers and streams flowing from the park taped to provide safe and clean water to the community. This has improved on their quality of life and reduced encounter of local people with the wild animals in search of water. However, a local leader in Bundikutenganwa had this to say:

"Although some community have clean water, we have not benefited from the project. We draw water from unprotected wells which is unsafe. The children and women suffer especially during the season looking for water in the park. This create a high risk of being attacked by animals.

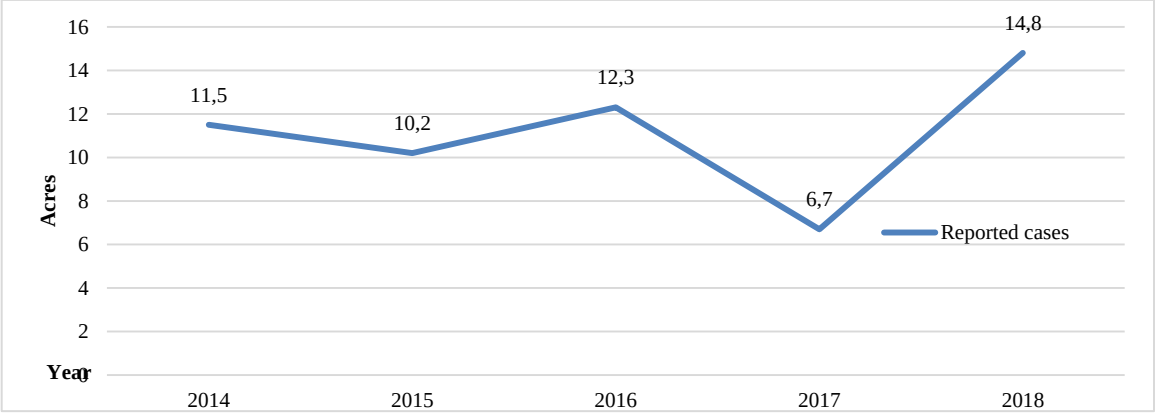

Figure 7. Shows acres of crop land destroyed between 2014 – 2018 (Source: Semuliki National Park annual Reports)

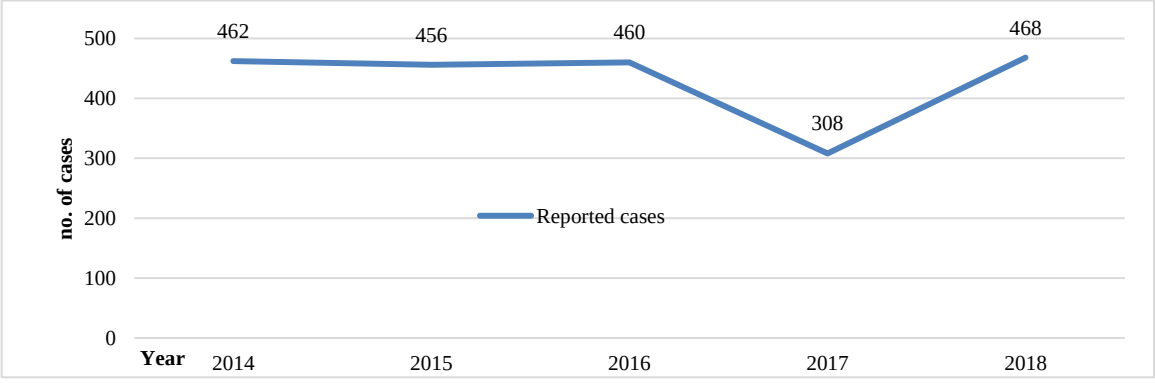

Figure 8. Showing cases of crop damages reported to UWA between 2014 - 2018 (Source: Semuliki National Annual Reports)

Majority (90.5%) of the respondents indicated that crop damage had continued to occur. Therefore, the strategy of managing problem animals has not worked well. The reported trend in crop damage is presented Figure 7 and 8.

From the Figure 6 it can be observed that, 11.5 acres of crop land were destroyed in 2014, 10.2 acres in 2015, 12.3 acres in 2016 and 6.7 acres in 2017 and 14.8 acres in 2018 due to increase in wild animals. This corresponds with the number of cases reported in Figure 7. As observed from Figure 7, crop damages are rampant in the community lands surrounding the SNP. 462 acres of crop land were destroyed by wild animals in 2014, 456 acres in 2015, 460 acres in 2016, 398 acres in 2017 and 468 acres in 2018. Local communities feel that the park has left the responsibility of managing the wild animals to them through guarding. It was also noted during the FGDs that collaborative wildlife management has not reduced the anger of the local community towards wild animals such as the baboons which are referred to as *Nkukulu* (notorious) or ADF rebels which kill them. There is also lack of active Problem Animal Control Unit (PACU) at the sub counties.

DISCUSSION

1. Collaborative management strategies used in Semuliki Protected area

The collaborative strategies used in the management of wildlife for the promotion of tourism in SNP include: problem animal management, scare shooting, land use planning, revenue sharing, resource harvesting, sensitization and awareness programs. The use of these strategies had reduced severity and frequency of local people to encounter with wild animals. This had increased people's tolerance towards wildlife. These strategies have been identified as being both indirect and indirect for preventive or mitigation of the effects from wildlife (Muthuri, 2005; Treves, 2007).

They are important in coordinating tourism in rural area and in solving wicked problems that are beyond the capacity of the management departments (Sentanu et al., 2023). However, involving tourist in the process has been acknowledged due to the transitory nature of tourism (Reina-Usuga et al., 2024). However, involvement of tourist in management protected areas and tourism in general in Semlik National Park was limited.

2. Problem animal management strategy

Deaths, injuries and crop damage due problem animals are not restricted to communities around SNP. In South Eastern Zimbabwe, the findings by Dhliwayo et al., (2023) show that communities neighboring the Save Valley Conservancy lived under constant fear due to attacks by elephants, buffalos, lions, hippos and crocodiles. The problem animal management measures around SNP include planting Mauritius (*Ceasalpanea decapitate)* thorn hedges along the boundaries, erection of elephant deterrent boardwalk ways and scare shooting. The Mauritus thorn hedges are planted around the park because they are cheap to maintain, ecologically friendly. They also act as habitat for wild animals such as wild pigs and the birds.

These have been reported to be used around Tarangire NP, Amboseli NP, Endarasha near Aberdera NP, Ol Moran in Nyeri and Laikipia where they are effective in preventing wildlife from crop damages and depredation of livestock (Muthuri, 2005).

Scare shooting is another strategy which was used in emergency situations by rangers of SNP to scare away herds of elephants or buffalos which invade the crop farms around SNP. The local communities are expected to report immediately animal that stray to the gardens. Musyoki (2014) noted that exploders or fire crackers were used by a NGOs to scare wild animals in community farms around Sagala, Taita and Tevate in Kenya. Elephant deterrent board walk ways with bee-hives and wires attached are erected such that when the elephants hit the wires, the bees buzz which scares them from the community land. The bees help in the pollination of the plants and provide honey for sale. This improves on people's income. Traditional bee-hives and recorded bee sound were used to scare elephants from Tsavo NP and Tarangire NP from crossing to community land (King et al., 2018; Sosiya, 2016). The land use planning around SNP was being implemented as a strategy. It included demarcating park boundaries, planting woodlots or trees, agro-forestry and planting unpalatable crops. Local people in Burondo Sub County were involved in demarcating park boundaries by planting Mauritius thorn hedges (*Ceasalpanea Decapitate*) to prevent encroachment and minimize disputes between the park and the local people.

Local people around Chtwan Nationa Park in Nepal plant eucalyptus trees and Mauritus thorn hedges to cut off encroachment (Upadhyay, 2013; Chhetri et al., 2003). Also planting unpalatable crops like chili scare wild animals like elephants. Nyashadzasha (2017) noted that chili pepper mixed with elephant dung if thrown in fire produces noxious smock which chocks the animals. Also, in this area, local communities had established woodlots or trees to reduce pressure on the park. This was providing alternative source of wood other than depending on the park for wood supply. Agroforestry was encouraged to improve on soil fertility, provided timber, firewood, fodder and medicinal herbs to the surrounding communities as the case with areas around Mount Elgon National Park (Hinchley et al., 2000).

3. Revenue sharing

Revenue share involved sharing some of the revenue generated from the gate entry fees among the neighboring communities. The aim was to increase the value attached to the park and reduce illegal activities. Sustainable projects were encouraged and were implemented around the park in order to improve on the quality life of the local people around the protected area. This was noted by Sosiya (2016) around Tarangere NP. The aim was to reduce pressure on the park resources. In this area, the share of the revenue collections from the protected area is given to local community groups according to the already existing projects. For example, the Mantoroba rattan cane groups, which is involved in art and craft project and skill training, Bamaga anti-poaching group involved with a fish project and Bubulongu farmers' groups with a bee project and fish ponds. These groups had established projects to improve on their livelihoods, but were bedeviled with financial mismanagement. Moyini et al., (2006) noted that local community groups living around the park with projects have benefited from the revenue shares and improved on their livelihoods. Bedelian & Ogutu (2017) found

that revenue shared with pastoralists around the Maasai Mara National Reserve provides an important, reliable, source of income and prevents households from selling their animals during stress and for cash needs.

However, in Bwindi impenetrable National Park where revenue was allocated to individual household project in instead of the community projects, this did not reduce the unauthorized activities in the park (Twinamatsiko et al., 2024). In Mghahinga National Park in Uganda, the scheme was intended to impower women where it failed (Iradunkunda & Agaba, 2021). Nevertheless, it is considered to be effective and practical choice incentive option (Mackenzie, 2012).

4. Resource harvesting

The local people living around the park were allowed to harvest resources from the park within a radius of 2km (collaborative zone), subject to Collaborative Resource Management (CRM) agreement, negotiation, and request from the park. In turn the resource users volunteers to monitor illegal activities and regulates resource harvesting. Resources harvested include; firewood, (fallen dead wood) exotic trees (eucalyptus and cassia), rattan cane (*Calamus Derratus*), spear grass (*Imperata Cyclidrica*), palm leaves *Phoenix Reclinata*), herbal medicine, mushrooms, water and visiting cultural sites. The resource harvesting increases the value the local people attach to the park and reduce the cost of employing the rangers. In Chitwan National Park resource harvesting was categorized into timber and non-timber including permission to visit cultural sites in the protected area (Upadhyayay, 2013). In Zimbabwe, Botswana and Namibia, local communities living near the parks are permitted to hunt four buffalos and three elephants every year (Sarre, 2017).

In Kenya Pastoral communities around Maasai Mara are allowed access to different areas of the reserve, away from tourist camps, on a rotational basis. This provides them with opportunities for good quality forage especially during the dry season, thereby contributing to community resilience (Bedelian & Ogutu, 2017).

Gravity water systems have been established through the protected area to the local communities by World Vision, Action Aid, and Adventists Development Relief Agency (ADRA). This has made water accessible to communities reducing human-animal interactions as it was the case before collaborative management. This was the case in Tanzania and Kenya where water was made available for livestock hence reducing human encounter with wild animals (Muthuri, 2005).

5. Sensitization program

A variety of sensitization programs are used to convey messages to the local communities around SNP about collaborative wildlife management such as community meetings, radio programs, MDD, after church service meetings, market days and school programs. The use of a variety of methods helps the conservation authorities reach all categories of people such as the young, old, women and men. (2014) also found out that stakeholders carry out sensitization programs to the communities living around the PAs, through media programs, drama, sports icon and documentaries.

The purpose of sensitization is to address issues such as the problem animals, resources to be harvested and their sustainable use, importance of biodiversity, illegal activities, encroachment, family planning, sanitation and the role of community in conservation. This can lead to the co-existence of the local people and wildlife. Namatovu (2015) also noted that communities around MENP were sensitized regularly about the useful of the protected area, and how to manage the park.

Sensitization around SNP is carried out by local community MDD groups, WCCSNP or CCRs, NGOs such as CARE, USAID, Caritus Marie Stopes, World Vision and ESCOM. The different groups involved in spreading the messages embark on other conservation activities for example the Bamaga cultural (the anti-poaching group), Bubulongu development farmers group, have (bee keeping &fish farming) Mantoroba Rattan cane user (art and craft or skill training and tree planting). This has helped to promote wildlife conservation. Shresha (2015) also found out those women groups, NGOs for instance WWF, DNPW and school clubs were involved in promote wildlife conservations through tree planting eco- tourism and bee-keeping around Chitwan NP in Nepal. External stakeholders (government) use strategies like training laws and policies to build capacity in the local communities (Lukman et al., 2024).

6. Perception of the local communities about the strategies used Semuliki National Park

The local people around SNP had various opinions about the performance of the strategies employed in Collaborative Wildlife Management. The performance was determined basing on whether illegal activities in the park were reducing, improvement authority-community relationship, improvement in quality livelihoods, rehabilitation of the park and reduction in crop and property destruction by wild animals.

6.1. Reduction in Encroachment to the protected area

Involving local communities in maintaining the park boundaries, plant crops in protected buffer zone, removing exotic had minimized the rate of encroachment to the protected area and other illegal activities. Chhetri et al., (2003), indicated that allowing local people around Chitwan NP and MENP to plant crops and trees under the boundary trees and harvesting trees periodically motivated local communities to reduce encroachment on the parks. Planting crops like tea in the buffer zone reduced damage to crops by the Baboons and Chimpanzees from Mughinga National Park in Uganda (Akampulira et al., 2015). These activities have not only reduced encroachment, but also protected and rehabilitated the degraded protected areas. This was also noted by Uyadhayay (2013); Whitesell et al. (1997), where the local communities were involved in de-barking, weeding thinning and removal of selected exotic plants. Existence of woodlot and agroforestry activities around the protected area had reduced pressure on the park to provide firewood, poles and medicinal plants. Such activities were also noted to have reduced pressure on the park and increased on bird species in Nepal (Poudel, 2018).

Regulated resource harvesting had reduced tension between the community and Park authorities. This was also the case in Zimbabwe, Caprivi in Namibia, Nepal and Botswana where poaching reduced because funds raised from sale of hunting

licenses has reduced poaching because the money raised from the sale of licenses was shared between the communities and conservation activities (Newton et al., 2016; Amin et al., 2017). Despite sensitization and regular patrols by the law enforcement officers, monitoring the firewood collection is a challenge due to many people who come to harvest on the day of harvesting. Resource users forget their roles of monitoring resources due to controversial issues such as of lack of incentives and failure to follow rules and guidelines as agreed upon. On the contrary, Namatovu (2015) also asserted that the local people near MENP carried out poaching of black colobus monkey to use the skin in cultural circumcision.

6.2. Improved park-community relationship

There is improved park-community relationship because the resource users such as the Mantoroba rattan cane users and the Bamaga anti-poaching unit volunteers to protect wildlife by carrying out activities such as; reporting illegal activities, unknown people found in the park, encroachment, removal of snares and traps and arrest offenders. This has led to increase in wildlife and regeneration of vegetation. The involvement of local communities in managing wildlife and protected area promoted good relationship between the park authorities and communities around in Zambia and Kenya (Lamsal, 2012; Frank & Small, 2016; Niskennen et al., 2018; Moyini et al., 2006). The good relationship led to a regeneration in flora and fauna in the protected area. This in turn boosted tourism. On the other hand, restrictions, denial, heavy punishments and exclusion of local communities leads to resentments and conflicts (Nakakawa et al., 2015; Nyashadzasha, 2017; Twaambo 2007).

6.3. Improvement in the quality of life

Partnership with the local communities has created employment opportunities such as; sale of art and crafts, fish farming, bee keeping, maintaining the board walks, boundaries, and water source, cleaning Bumaga camping site or Banda. These people earn income which has helped them to improve on their standards of living. This has motivated them to support wildlife management programs. Niskanen et al., 2018; Sosiya, 2016; Mbaiwa, 2015 observed that the local people who are employed in tourism related projects in Kenya, Tanzania and Boswana earn salaries or wages which helped them to buy the basic needs. The free tap water from rivers and streams flowing from the park has reduced encounter of local people with the wild animals. Provision of water for livestock or people has reduced encounter of the local people and the wild animals in Kenya and Tanzania (Muthuri, 2005).

6.4. Reduction in crop damages

Crop damages are a great challenge of SNP especially in places where the Mauritius hedges have not been well maintained. They can help to reduce crop damage if well maintained. They can manage to control big animals such as elephants, baboons, and bush pigs, but are less effective in controlling small animals (Akampulira et al., 2014). The elephant deterrent board walk way helps to control the elephants but few parts have been destroyed in some villages. The bee hives along the board walk ways availed honey to the local people. This reduced the incidences of fire outbreak in the protected area due to search of honey by the locals in the park. Fences require large sums of capital for installation, regular monitoring and maintenance. However, they are effective in controlling wild animals (Frank et al., 2016, King et al., 2014; Sisoyi, 2016).

Scare shooting was rarely used due to frequent insecurity by the Allied Democratic Force (ADF) and Rwenzururu inter-tribal conflicts. However, it was said to be a temporary method because its effectiveness can diminish over time as animals such as elephants became habitual to noise (Nakyesa, 2013). It was discouraged around MENP and Kidepo valley National Park as it would cause alarm among people already plagued by periodic rebel activities (Chhetri et al., 2003.

CONCLUSION

A number of collaborative management strategies were used in managing wildlife and promoting tourism around Semulik National Park. These included, animal problem management strategy, land use management, regular resource harvesting, revenue sharing and community sensitization. Within these strategies, a number of activities were implemented in partnership with local communities. These included: boundary maintenance, growing hedges, establishing buffer zones, agroforestry activities around the park, board walk ways fitted with bee hives, removal of exotic and invasive plants, and many others. It was established that resource harvesting was the most effective strategy, followed by problem animal management and land use planning, employment of the local communities and managing wildlife together with the communities. It was established that community-wildlife authority relationship had improved. There was a reduction in illegal activities and encroachment on the protected area. The protected area had registered regeneration of vegetation and increased wild animals. However, there was a challenge of animals still raiding community gardens due lack of a clear buffer zone or lack maintenance of the hedge and board walk ways. Some members of the community still resent park authority activities and view them as being oppressive. The small and intermittent revenue share from the park authority has failed to create the impact. The collaborative approach has fostered cooperation, reducing conflict and these have promoted tourism both locally and internationally.

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