Implementing park action plans for community engagement to tackle IWT

Project Research Report
Acknowledgements

We would like to thank our project team in particular George Owoyesigire, Adonia Bintoora and Pamela Anying (Uganda Wildlife Authority); Winnie Auma and John Illima (Village Enterprise); and Simon Nampindo, Geoffrey Mwedde and Isaac Kirya (Wildlife Conservation Society) and Julia Baker (Balfour Beatty) for their contributions to data collection and project design as well as their general inputs to the work that fed into this research report. We are particularly grateful to the Village Enterprise field staff for their commitment to collecting the data under Covid 19 restrictions.

Author information

This report was written by:
Dr. Henry Travers, Senior Research Associate (University of Oxford), Director (Cambridge Conservations Solutions)

About the project

For more information about this report, or the Implementing park action plans for community engagement to tackle IWT project, visit www.iied.org//park-action-plans-increasing-community-engagement-tackling-wildlife-crime or contact: Dilys.Roe@iied.org

IIED is a policy and action research organisation. We promote sustainable development to improve livelihoods and protect the environments on which these livelihoods are built. We specialise in linking local priorities to global challenges. IIED is based in London and works in Africa, Asia, Latin America, the Middle East and the Pacific, with some of the world’s most vulnerable people. We work with them to strengthen their voice in the decision-making arenas that affect them — from village councils to international conventions.

Published by IIED, September 2021
http://pubs.iied.org/20526G
Contents

1. Introduction 2

2. Project background 3

2.1. Project area 3

2.2. Theory of change 3

3. Evaluation strategy 6

4. Attitudes 7

4.1. Evaluation approach 7

4.2. Project beneficiaries 8

4.3. General population 10

4.4. Ranger perceptions 13

5. Illegal activities 15

5.1. Evaluation approach 15

5.2. Baseline 15

5.3. Project impact on illegal activities 16

6. Illegal activity tipoffs 18

6.1. Evaluation approach 18

6.2. Baseline 18

6.3. Indicator performance 18

7. Human wildlife conflict 19

7.1. Evaluation approach 19

7.2. Human wildlife conflict 20

7.3. Indicator performance 21

8. Discussion of project impact 22

Appendix A. Baseline/Endline attitude questions for inclusion in VE entry survey 23

Appendix B. Questionnaire for non-participants 24
1. Introduction

A key component of successfully addressing the challenge of wildlife crime is understanding the motivations and drivers behind the behaviours of the people involved. However, simply gaining such an understanding does not in itself guarantee success. Programmes must be developed, financed and implemented to put this understanding into practice. Added to this, progress against pre-identified indicators should be tracked and evaluated to provide an understanding of performance. It is with these principles in mind that the *Implementing park action plans for community engagement to tackle IWT* project was developed.

Between 2014 and 2017, with support from the UK Government’s Illegal Wildlife Trade Challenge Fund, the International Institute for Environment and Development (IIED), the University of Oxford and the Wildlife Conservation Society (WCS) Uganda programme, undertook research at Queen Elizabeth Conservation Area (QEPA) and Murchison Fall Conservation Area (MFCA) to explore the drivers, scale and scope of wildlife crime, and predict the effectiveness of interventions aimed at reducing wildlife crime. This research showed that while poverty was one driver of illegal hunting and wildlife trade, resentment about high levels of human wildlife conflict also significantly influenced people’s behaviour. Many people hunt because they have experienced loss of crops or livestock to wildlife or because there are no other income earning opportunities available. However, the research also found that activities designed to mitigate human wildlife conflict, such as the establishment of local volunteer groups, known as wildlife scouts, to help farmers respond to incidents of crop raiding and the introduction of wildlife friendly enterprise schemes, were likely to result in reductions in wildlife crime.

Although the Uganda Wildlife Authority (UWA) has a community conservation programme to address issues such as human wildlife conflict and improve engagement, it has traditionally been hampered by limited resources and varying support at headquarter level. There is also often limited coordination between UWA and NGOs working around national parks to support community-based interventions to tackle wildlife crime. As a result, the relationship between UWA and local communities is often poor, with significant distrust on both sides. This was borne out in the findings of the research undertaken around both QENP and MFCA between 2014 and 2017. In order to improve the situation around both parks, the research team worked with UWA to develop park level action plans for tackling wildlife crime, which were subsequently launched by UWA at a meeting held in Kampala in April 2017. A key focus of these plans was striking a better balance between UWA-led law enforcement and community engagement activities, as well as applying a theory of change approach to integrate all activities aimed to address wildlife crime under single strategic plans. The *Implementing park action plans for community engagement to tackle IWT* project was subsequently developed to test the implementation of these plans as a means of measuring their effectiveness and providing further evidence regarding the potential for greater investment in community engagement as a means of addressing wildlife crime in and around Uganda’s national parks. The purpose of this report is to evaluate the evidence collected as part of the project and to examine any impacts the project may have had at key stages of the project theory of change.

---


2. Project background

2.1. Project area

The project was designed to support UWA in the implementation of the park-level action plan to address wildlife crime at MFCA through engagement with local communities. Given budgetary constraints, it was first necessary to select a localised area in which to implement project activities that could inform implementation on a greater scale. Key criteria for site selection included:

- The area had previously been identified as a hotspot for wildlife crime
- The area had previously been identified as a hotspot for human wildlife conflict
- The presence of existing scout groups that were not already receiving support or training from NGOs
- The presence of opportunities for enterprises suitable for the Village Enterprise model;

After a detailed scoping and site-selection exercise, nine adjacent villages were selected in Kiryandongo subcounty neighbouring Karuma Wildlife Reserve (KWR; Figure 1).

![Map of project villages](image)

**Figure 1:** Map of project villages.

2.2. Theory of change

Two community-based interventions identified in the action plan for MFCA were implemented in the nine project villages. As such, the theory of change for the project is drawn directly from the park action plan (Figure 2).

The first of these interventions was the support of wildlife scouts, community volunteers who were trained by UWA in methods to protect farms from crop raiding by wild animals coming from inside the
park. This intervention was implemented by UWA with support from the Wildlife Conservation Society and was expected to contribute to reducing wildlife crime through multiple pathways within the theory of change. The immediate direct effect of the wildlife scout programme was expected to be a reduction in the impact of crop raiding as a result of the wildlife scouts responding to calls for assistance from members of their villages. This in turn was expected to reduce the resentment resulting from human wildlife conflict and improve the relationship between UWA and local communities. Research undertaken as part of the previous project had shown that households experiencing human wildlife conflict were more likely to be involved in wildlife crime but were also more likely to change their behaviour following community engagement. Consequently, the expected reduction in the impact of human wildlife conflict and improved relationship between UWA and local communities was expected to reduce involvement in wildlife crime, particularly illegal hunting.

Figure 2: Conceptual model showing how planned interventions to combat commercial bushmeat hunting and trade are expected to achieve performance targets. Source: UWA (2017) Murchison Falls National Park Community-Based Wildlife Crime Prevention Action Plan (2017-2023).

Support for the wildlife scout programme was combined with support for the creation of microenterprises for wildlife scouts and other households. This component of the project was implemented by project partner Village Enterprise and followed an adapted version of an intervention model that has been implemented successfully in other parts of Uganda. This included the creation of six business savings groups, each comprising ten businesses of three entrepreneurs each. Entrepreneurs were selected from among the poorest households in each village and were given training in forming and managing small businesses. In turn, each business was provided with a micro grant of $150 to seed their activities. The aim of this intervention was to increase opportunities for local people to become engaged in legal livelihood ventures. As with the wildlife scout programme, the
research findings of the previous project suggested that this would lead to reductions in involvement in wildlife crime. Specifically, it was expected that it would reduce the need to participate in wildlife crime as a means of generating income and increase the labour demands of participating households, thereby reducing opportunity for involvement in wildlife crime. It was also intended to serve as an incentive for wildlife scouts to remain active, as a member of all wildlife scout households was enrolled in the programme. In addition, it was expected that some businesses supported through the microenterprise intervention would provide raw or processed materials (e.g., chilli) for use in human wildlife conflict mitigation.
3. Evaluation strategy

In addition to providing support for the implementation of the MFCA action plan to reduce wildlife crime, the project was designed to provide evidence to UWA on the potential impact of community engagement interventions, such as those being supported by the project, in reducing wildlife crime and increasing local support for conservation. As such, a series of key performance indicators were identified to be measured at the beginning and end of the project. These were grouped into five main lines of enquiry:

- Attitudinal change among direct project beneficiaries, the general population of project villages and UWA staff
- Financial impacts for participants of the microenterprise programme managed by Village Enterprise
- Monitoring of illegal activities within areas of KWR neighbouring project villages and similar control villages
- Reporting of illegal activities to UWA by local communities
- Incidents of human wildlife conflict recorded by the wildlife scouts in each village;

Given the budgetary constraints, it was not possible to undertake a formal impact evaluation using rigorous experimental or quasi-experimental methods for all aspects of the evaluation. However, the performance indicators used were identified to track changes across key steps in the project theory of change, which had in turn been developed following the findings of prior research. As such, the evidence provided gives an indication of whether the changes expected to result from project activities are indeed occurring as predicted. The following section of this report detail the methodologies followed for each of the main lines of enquiry (with the exception of the financial impact of the microenterprise programme which is detailed elsewhere) and the results that stem from the different approaches taken.
4. Attitudes

4.1. Evaluation approach

A key pathway for improving conservation outcomes identified in the project theory of change was for project participants, and the wider population within project villages, to benefit from project activities and, as a result, for attitudes towards the park and towards conservation activities to improve. These improved attitudes were in turn expected to contribute to changes in behaviour. Prior to implementation, the attitudes of three groups were selected for monitoring: wildlife scouts and other participants of the micro-enterprise intervention, people living inside project villages but not participating in any project activities and KWR rangers.

Attitudes of the wildlife scouts and individuals participating in the micro-enterprise intervention implemented by Village Enterprise, were initially interviewed by Village Enterprise enumerators during the registration of business owners in 2018 (see Appendix A for questionnaire). These interviews included a series of questions covering attitudes towards human wildlife conflict reporting, reporting of illegal activities and conservation, as well as the reported likelihood of engaging in different behaviours. The results of the attitude and reported behaviour questions were scaled between -1 and 1, with negative scores indicating more negative attitudes towards conservation and positive score indicating more positive attitudes. This corresponds to a range from strongly disagree to strongly agree for the attitude questions and from very unlikely to very likely for the reported behaviour questions. Midline and endline surveys were subsequently conducted by Village Enterprise enumerators with the same cohort of respondents at the end of the first implementation cycle in 2019 and during the same period of the final year of the project in 2020 respectively. There was a low level of survey attrition for both the midline and endline surveys, with ten households dropping out at each stage.

Following the midline survey, concerns were raised within the project team regarding the apparent disparity between the changes in attitudes observed through the baseline and midline surveys and informal feedback received by project staff during their interactions with project participants, particularly the wildlife scouts, who enthusiastically voiced their support for the project. A specific concern was the possibility for participants to have responded strategically during the baseline survey prior to receiving the support of a new project (eg it is possible that respondents may have felt that voicing a strong support for conservation at this stage would be more likely for them to be included in beneficial activities). In the absence of a control group against which to compare responses, the endline survey was adapted to include questions asking respondents to retrospectively self-report their attitudes prior to the project in addition to their attitudes at the time of the survey. Although this approach is subject to potential reliability issues, notably through recall and social desirability biases, the responses given provide a robustness check against changes in attitude identified between the original baseline and endline surveys.

Households living inside project villages but that had not participated directly in any of the project activities were surveyed once at the end of the project (see Appendix B for questionnaire). A sample of 226 households were randomly selected for interview, with all interviews conducted with the head of the household or their spouse. Due to difficulties obtaining permission from local authorities to conduct interviews in Karungu 2 over concerns about illegal land grabbing, the 226 interviews were split equally over the remaining eight villages. The purpose of the interviews was to investigate attitudes within the wider population towards the wildlife scouts and conservation in general, and to check for any potential spill-over effects from the micro-enterprise programme.

UWA rangers stationed at KWR were interviewed in February 2021 to investigate their perception of changes in project villages in comparison with similar nearby villages. These interviews focused on the relationship between local community members and UWA staff, as well as perceived changes in the prevalence of illegal activities and the provision of information from local communities.
4.2. Project beneficiaries

4.2.1. Baseline

The two different methods used to establish the baseline attitudes of project participants resulted in significantly different mean scores (Figure 3). In general, the original baseline, for which project participants were surveyed before support for either the scouts or micro-enterprises had started, showed participants to be significantly more pro-conservation and were more consistent between respondents. The retrospective baseline, for which participants were asked during the endline survey how they felt at the beginning of the project, were more negative but also more variable. The exceptions to these general trends were the scores for people’s attitudes towards tourism, their perception of how equitably benefits from tourism are shared and towards living next to a conservation area. These questions elicited a greater level of variability for both methods, with significant overlap in responses. The increased variability of response is in part a function of survey attrition with 20 fewer respondents in the retrospective baseline relative to the original baseline.

![Figure 3: A comparison of baseline responses elicited using the original and retrospective methods. Error bars indicate 95% confidence intervals.](image)

4.2.2. Change in attitudes and engagement

Given the disparity between the two baselines, the analysis of attitudinal change was conducted separately using both sets of baselines. This allowed for a check on the robustness of the findings. Separate linear mixed models were run for each indicator to assess the average change across the five attitudinal and three engagement questions, while controlling for other factors. This also allowed for differences between scout households and beneficiaries of only the micro-enterprise programme to be investigated. The results of these models show a largely positive change in both attitudes and likelihood of increasing engagement, with positive changes indicating a switch to more pro-conservation attitudes and behaviour (Figure 4). However, there were significant differences in the changes observed using the two baseline methods.
The analysis using the original baseline shows modest but statistically significant increases in pro-conservation attitudes and engagement for six of the eight indicator questions (Figure 4). The two exceptions to this were small, but significant, declines for attitudes towards UWA and living close to wildlife. However, it should be noted that the baseline for these two indicators were very positive, such that - even after the small declines observed – average attitudes remained very positive for both indicators. It is possible that this observed change reflects a regression towards the mean. One surprising aspect of the results of this analysis was the differing changes revealed between non-scout beneficiaries (ie participants of only the micro-enterprise programme) and scout households (Figure 5). This showed that, although scouts were slightly more likely than other project beneficiaries to engage with other scouts and UWA rangers, their belief that they benefited from tourism in the park or from living next to a conservation area both declined relative to other beneficiaries. One possible explanation for these relative differences are the experiences of the scouts which showed the benefit of engaging with rangers and other scouts to address human wildlife conflict but also highlighted this negative aspects of living close to wild animals.

The results of the models using the retrospective baseline are significantly more positive. For non-scout households, these show sizeable increases in pro-conservation attitudes and self-reported likelihood of...
engaging with conservation activities for five out of the eight indicator questions (Figure 4). No significant change was observed for people’s beliefs that they benefit from tourism in the park or that tourism revenues are equitably shared. However, this is not a surprise given that the project did not include any tourism related activities. Perhaps more surprising is that there was no statistically significant increase in people’s belief that they benefit from living next to a conservation area as this was the direct outcome expected to be achieved from people participating in the micro-enterprise programme. In part, this is due to the greater variability in responses in the retrospective baseline relative to the original baseline. However, it may also be explained by the late emphasis placed by Village Enterprise on connecting the micro-enterprise programme with conservation. Had this emphasis been placed earlier in the project, it is possible that this result may have been more positive. This explanation is supported by anecdotal evidence from a model village approach implemented in the project area by Village Enterprise that applies lessons learned from the original nine project villages during the first year of implementation.

4.2.3. Indicator reliability

The fact that the two baselines give different results is disappointing but not unexpected given known sources of bias in self-reported attitudes. However, there was general agreement in the direction of change for the two baselines, particularly for the three conservation engagement questions. Similarly, the difference in magnitude can be explained by the fact that attitudes were generally very pro-conservation for the original baseline (making it impossible to attain the same level of change as observed using the retrospective baseline). Overall, although it is difficult to assess the true level of change, the results of this survey suggest a positive change in support for conservation and willingness to engage with UWA-led activities.

4.3. General population

4.3.1. Reported human wildlife conflict

Of the people interviewed as part of the general population survey conducted in Year 4 (ie people who had not directly participated in the project), 69.7% reported having had trouble with wildlife eating their crops or attacking their livestock over the past year. The average rating for the severity of this was 2.45 on a linear scale where 0 was not at all severe and 3 was very severe (Figure 6).

![Figure 6: Reported severity of human wildlife conflict in project villages.](image)

Only 22.6% of respondents affected by human wildlife conflict reported receiving help from people outside their household, with most of these receiving help from neighbours and wildlife scouts. Respondents were also asked about their perceptions of change in the severity and frequency of incidents of human wildlife conflict over the past three years. The results of these questions were mixed. Although 65% and 68% of respondents reported a change in severity and frequency respectively, there was a wide variation in ratings of the degree of change, with some respondents...
reporting a significant increase and some reporting significant decreases. This may in part be explained by the establishment of trenches along some portions of the boundary between KWR and the project villages, as the trenches were the most cited reason for reductions in the severity and frequency of crop raiding (Figure 7). A significant minority of people also attributed these changes to the activities of rangers and/or the wildlife scouts.

![Figure 7: Reasons given for reductions in human wildlife conflict severity (A) and frequency (B).](image)

For the respondents that reported increases in the frequency and severity of incidents of human wildlife conflict, it was interesting that few of the reasons offered for these changes were a result of the action or inaction of conservation interventions, although the lack of protection was commonly raised as a reason for increasing severity of crop raiding (Figure 8). A small number of people raised ranger inaction and, in areas not currently protected by trenches, some people reported that the trenches act to funnel animals into their fields. However, the most common reasons cited were increasing animal populations and a lack of food inside the park.

![Figure 8: Reasons given for increases in human wildlife conflict severity (A) and frequency (B).](image)

4.3.2. Awareness and perceptions of scout programme

Of the people surveyed, 79.1% reported that they were aware of the scout programme and were able to give an explanation of their role. Of these, 48.9% reported that they had requested help from the scouts in their village and 70.1% had reported crop damage or other impacts from human wildlife conflict to the scouts. One frequent concern raised about the use of wildlife scouts is that they can be perceived by local communities as spies for rangers. Given the potentially serious social repercussions that this can have, it was welcome that only 3.2% of people raised this as an issue. Reported attitudes to the scouts were very positive. Over 85% of people surveyed reported they were either happy or very happy about having scouts in their village (Figure 9), 53.0% of people reported that they would consider becoming a scout, and 93.9% of people believed there were benefits from having scouts in their village.

![Figure 9: Reported attitudes to the scouts.](image)
4.3.3. Awareness and perceptions of microenterprise programme

The proportion of people surveyed who were aware of the microenterprise programme was 46.8%. This is unsurprisingly lower than for the scout programme, as the scout programme was specifically designed to benefit the general population. Of the people who were aware of the microenterprise programme, the majority (72.7%) knew someone who was directly participating. The reported attitudes towards the programme were almost universally positive, with 95.9% of respondents that were aware of the programme reporting that they were either positive or very positive towards it (Figure 10) and 99.0% reporting that they felt there were benefits from having the programme in their village. Such a high level of support for the programme, even among people who did not directly participate, is highly encouraging and suggests that it may not be necessary for everyone in a village to participate in wildlife friendly enterprise programmes to influence general attitudes towards conservation, provided that the link between such a programme and conservation is made explicit and widely known.

The survey also examined evidence of spillover effects from the microenterprise programme into the general population. However, the evidence here is more equivocal. Just 11 respondents (4.6%) reported that they grew chilli and two of the 11 reported starting before the project period. In some ways this is unsurprising, as the microenterprise programme did not initially promote the production of chilli and adoption of new practices often takes some time to diffuse through generally risk-averse rural communities. Initial indications from the model village approach being piloted by Village Enterprise, where greater emphasis has been placed on promoting wider adoption of practices undertaken by the business groups, suggests that take up by non-project participants has been higher. A much higher proportion of people (59.4%) reported that they were part of a savings group, with 47.2% of these respondents having joined a group within the project period. However, several organisations have promoted savings groups in the project villages, so it is difficult to attribute this uptake directly to the
microenterprise programme. In general, though, reported attitudes towards savings groups were extremely positive (Figure 11). This suggests that if the microenterprise programme does contribute to wider uptake of savings groups beyond the supported business groups, the effect on local communities would be positive.

Figure 11: Reported experiences of savings groups within project villages.

4.3.4. Awareness and perceptions of UWA

Of the people surveyed, 86.9% reported a change in attitude towards UWA rangers over the project period (Figure 12). Of these, approximately 80% reported that their attitude towards the rangers had become either more positive or much more positive. This was attributed to a number of factors but included the improved responsiveness of rangers as a result of working with the wildlife scouts and appreciation that the rangers had trained and support the scouts. A further 21.0% of people reported their feelings about UWA had changed after being told that UWA supported the wildlife scout programme, with 86.7% of these respondents reporting that their attitude had become either more or much more positive as a result. This is further evidence of how people perceive that they are benefiting from the presence of the wildlife scouts and how this perception is in turn helping to improve the relationship between UWA and local communities.

Figure 12: Reported change in attitudes to how people feel about UWA rangers.

4.4. Ranger perceptions

One of the key objectives of the ranger interviews was to provide a counterbalance to investigate whether the findings of the general population and beneficiary surveys were reflected in any changes perceived by UWA staff. As the individual rangers interviewed had only been stationed to KWR during the project period, it was not possible for them to comment on changes within project villages since the start of the project. However, to account for this, they were asked to draw comparisons between project villages and other similar villages neighbouring KWR. It is of course possible that such differences pre-
existed the project but there is no reason to expect this in advance. Hence, these comparisons represent the best way to understand the potential impacts of the project from the perspective of UWA rangers on the ground.

Both rangers interviewed reported a reduction in human wildlife conflict in project villages relative to other nearby villages. They attributed this to the presence of the scouts and improved relationships with local communities. They reported that the scouts play a pivotal role in communicating instances of human wildlife conflict to the rangers which allows them to better respond and improves cooperation with the wider community. They report that the scouts themselves are very motivated and this has been helped both by the material support of equipment and the study tour which was arranged for the scouts inside the park. This has resulted in improvements in the information the scouts provide for both problem animals and illegal activities.

Both rangers reported improved relationships with the general public in the project villages, particularly in villages closer to the outpost which allows them to respond more to call outs for problem animals. This continued interaction has helped to demonstrate that the rangers want to help the local communities. They also report increased information about illegal activities being provided by both wildlife scouts and the general public in project villages, which they again attribute to the improved levels of mutual trust stemming from their increased interactions. Their perceptions of the trends in illegal activities were more mixed. While they report reduced levels of illegal hunting, in 2020 they saw increased illegal entry into the park and collection of wood for firewood and charcoal production. This increase was attributed to the COVID-19 pandemic, which has left people in need of seeking alternative sources of income. The reduced levels of hunting were attributed to the presence of the scouts.
5. Illegal activities

5.1. Evaluation approach

To estimate whether project activities have had a direct impact on wildlife crime, changes in illegal activities were evaluated through a before-after-control-intervention design. The original intention for this arm of the evaluation was for UWA rangers to inspect randomly selected grid squares in areas adjacent to villages participating in the project and to similar control villages and search for signs of illegal activities such as the presence of snares. However, budgetary constraints meant that it was not possible to carry out the evaluation as planned. The replacement design to assess changes in the prevalence of illegal activities made use of ranger patrol encounter data. Although this had the advantage of using an existing dataset that did not require additional survey work to be carried out, it significantly reduced the power of the evaluation to detect differences between control and treatment areas.

As illegal activities are often impossible to measure directly, a proxy measure, the illegal activities that rangers encounter on patrol, was used to assess the project’s impact on wildlife crime. Encounter data, such as this, is dependent on a number of factors, including the level of effort rangers put in to detecting illegal activities. To account for this, catch per unit effort (CPUE) was used as the basis for the analysis, with the number of times a particular grid square was visited by rangers on patrol used as a measure of patrol effort. Within each grid square, the number of illegal activities encountered by rangers on patrol over the course of a year was divided by the level of patrol effort in that grid square for the same year to give the annual CPUE.

The evaluation sampling frame included the area inside KWR immediately adjacent to any village bordering the park. As the risk of contamination from residents of other villages increases with distance into the park, only areas within 3km of the park boundary were sampled. This area was divided into 1km grid squares. The treatment area was therefore all grid squares within 3km of the park boundary bordering any of the nine project villages: Kihura, Kisweka, Kibimbya, Bunyama, Kahara in Kyakende parish and Karungu, Nyinga, Chopelwor, Kiyogoma in Kichwabugingo parish. These villages are contiguous with one another along a 25km stretch of the boundary with KWR. The control area was determined by matching grid squares located within the sampling frame to similar grid squares in the treatment area over a number of covariates including habitat type within the grid square, distance to nearest ranger post, distance to the park boundary and the baseline CPUE.

Balancing tests were used to evaluate the results of matching estimators, by comparing the matching covariates for the intervention and matched control groups. Statistics calculated included the means for each group; the mean, median and maximum difference in the empirical quantile-quantile plot of intervention and control groups on the scale in which the variable was measured; the mean, median and maximum difference in the empirical cumulative distribution function; the variance ratio of intervention over control groups; t-tests comparing the samples before and after matching (the two sample t-test was used pre-matching and the paired t-test was used post-matching); and the bootstrap Kolmogorov-Smirnov test, which tests for a significant difference across the entire distribution (as indicated by the empirical quantile-quantile plots). The treatment effect was estimated using a linear mixed effects model.

5.2. Baseline

As illegal activities detected on ranger patrols have been measured for a long time in MFCA, it is possible to create a baseline from prior to the implementation of the project activities. However, there are fewer patrols in KWR than in other parts of MFCA, particularly during years when budgets are reduced due to lower numbers of visiting tourists. This was the case in 2014 and 2015 during the West African Ebola virus epidemic. As a result, the five-year baseline has two years in which patrol effort in KWR was significantly reduced. Since 2016, patrol effort in KWR has increased and this trend continued to the end of the evaluation period.
The mean CPUE in KWR varied significantly over the baseline period (Figure 13). There are several potential factors that may have served to influence this, including the original level of illegal activity within the areas patrolled, the detectability of that activity, the intensity at which each grid square was patrolled and variation in how each activity was recorded. However, there is also significant uncertainty over these annual estimates and it is possible that the variation in CPUE between years is simply a result of this uncertainty.

![Figure 13: Annual CPUE for grid squares within 3km of the KWR boundary.](image)

Similarly, although there was also variation in CPUE observed between treatment and control grid squares (Figure 14), this again may be a result in the uncertainty of these observations.

![Figure 14: Annual CPUE in control and treatment areas of KWR.](image)

5.3. Project impact on illegal activities

The linear mixed model found no evidence to support reductions in illegal activities as a result of project activities (Figure 15). It is possible that this finding is due to the evaluation approach used as the patrol data contained very few illegal activities in either control or treatment grid squares. The area inside the boundary of KWR that borders the study village is predominantly woodland and this makes it harder to detect illegal activities than in the savannah areas of MFCA. Similarly, the reduced patrol effort in this area relative to areas that receive more tourists meant that there was significant uncertainty around each effect estimate. However, the possibility that the project had no impact on illegal activities cannot be discounted. There was a general trend across both control and treatment areas for increasing illegal activity over time. Although this supports the findings of the ranger interviews, which found that illegal activity was perceived to have increased in 2020, it suggests that this may have been part of a longer trend of increasing activity.

![Figure 15: Project impact on illegal activities.](image)
Figure 15: Effect estimates of the model of annual CPUE.
6. Illegal activity tipoffs

6.1. Evaluation approach

The decision to assess the impact of the project on the provision of tipoffs about illegal behaviour was based on the premise that, as relations between local people and UWA improve as a result of project activities, local people would be more likely to provide information about illegal behaviour to UWA. This outcome was predicted through the research conducted under the original research project. Following initial enquiries with the community conservation warden for MFCA and rangers, it was ascertained that no records relating to tipoffs were being maintained by UWA staff. As a result, a digital tipoff form was designed that could be uploaded to any smart device and used to input data each time a community conservation ranger received information. The form could also be used each time a ranger visited a village to provide a measure of effort, as prior information suggested that most tipoffs were received during such visits. Given that community conservation rangers visit all villages neighbouring KWR, the intention was for this dataset to be used to compare trends in tipoffs between project and non-project villages. This would then provide a robust measure of the impact of project activities on the information provided to UWA.

6.2. Baseline

A total of 24 individual tipoffs were recorded by one UWA staff member stationed at KWR during the four-month period from October 2018 and January 2019. Of these, 14 were received during routine village visits for village meetings or responding to incidents of human wildlife conflict, seven were received by phone, one was received at the ranger station and a further two were received through other means. All reports were received from individuals previously known to the UWA staff member. The main activity reported was commercial bushmeat hunting (16 reports), with illegal fishing and firewood collection both reported twice. Of the 24 reports, all bar one were reported as being responded to, with law enforcement activities forming the main response in all but one case. Community sensitisation was conducted in response to one report of illegal firewood collection.

6.3. Indicator performance

Following sharing of the tipoff form with the community conservation warden and rangers stationed at KWR, data collection was limited to a single UWA staff member. No other rangers used the form despite repeated requests from the project team. Furthermore, while data relating to 24 separate tipoffs were collected during this period, it appears that no data were input for village trips that did not result in tipoffs. In January 2019, UWA initiated a staffing reassignment that resulted in all existing community conservation staff, including the community conservation warden for both MFCA and KWR, moved to other parks. This created three main challenges: i) the new staff stationed at KWR showed even less interest in using the tipoff form, ii) new staff had no knowledge of the number of tipoffs that were received prior to their assignment at KWR, and iii) the new staff had yet to form relationships with individuals in the villages neighbouring KWR, a key factor in the provision of information.

Given that the tipoff form was not being used, it was doubtful that the data collected would be sufficient to provide a baseline against which to compare at the end of the project implementation period. As a result, the decision was taken not to continue with the tipoff indicator and to rely on other measures.

A separate study was undertaken by Michelle Anagnostou to investigate the perceptions of UWA staff stationed at MFCA relating to the provision of information by local communities.

---

7. Human wildlife conflict

7.1. Evaluation approach

It was originally intended that changes in the recorded incidents of human wildlife conflict would be evaluated through a before-after design, using data collected by participating wildlife scouts in project villages. All incidents of HWC in the nine project villages that were reported to the wildlife scouts were recorded during the project implementation period (Years two, three and four) with the intention of assessing change over time in the frequency and severity of incidents of human wildlife conflict. Unlike the illegal activity component of the evaluation, it was not possible to apply a before-after-control-intervention design for this aspect of the assessment, as this would entail training and equipping scouts in other areas, thereby undermining any comparison between the project and control area. However, during the project period, UWA established a series of trenches along portions of the boundary between the project villages and the park. This is likely to have significantly influenced rates of human wildlife conflict in both directions (i.e. reducing rates in areas immediately adjacent to the trenches and potentially increasing rates in areas between trenches). In the absence of a meaningful control, the establishment of the trenches meant it was not possible to isolate the effect of project activities on rates of human wildlife conflict. However, data collection was continued after the introduction of the trenches to provide UWA with a reasonable lower bound estimate of the extent of human wildlife conflict in the project villages and to assess the merits of using volunteer collected data.

An initial review of UWA records of human wildlife conflict for the two project parishes (Kichwabugingo and Kyankende; now subcounties) for the period between August 2015 and July 2016 prior to project implementation suggested that instances of human wildlife conflict are relatively consistent throughout the year, except for three months of lower activity between August and October (Figure 16). UWA rangers mostly only respond to instances involving elephants and nearly a third of these records occurred in Kihura, the village closest to the nearest ranger post (Kiruhura). Although it was recognised that this dataset may not reflect the true extent of HWC occurring within the two parishes, it was the best prior information on HWC available in the two parishes. Assuming the information for Kihura represented the most accurate picture of HWC in the project villages, an average of 2.7 instances of human wildlife conflict was recorded per month.

Figure 16: Instances of HWC in the two project parishes to which UWA responded between August 2015 and July 2016.

In addition to the wildlife scouts who were trained under the project, the Uganda Conservation Foundation (UCF) trained and equipped wildlife scouts in Purongo and Gotapwoyo parishes in the
collection of human wildlife conflict data, using a digital form developed in collaboration with IIED and WCS. However, UCF’s initial experiences were mixed, as only a subset of the wildlife scouts trained proved able to use a smart phone. This created a divide within the two scout groups between those who received smart phones and those who did not. There were also concerns that scouts did not personally visit each instance of HWC and so the data provided was second hand. Finally, there were instances of the apps used to collect data being deleted when the phones were taken to be charged. To avoid similar issues to that encountered by UCF, all scouts in the project site were trained in the collection of HWC data. This was hoped to reduce the burden on individuals and improve data collection. As such, every scout in each of the nine project villages received training on the data collection tool and the role of data collector was to be conducted on a duty basis by those scouts able to use the data collection tool. The questionnaire was designed in such a way that scouts could select relevant pictures to enable use by individuals with poor literacy. In order to avoid issues with the data collection tool being deleted from the smartphones or other apps being downloaded, parental controls were used to restrict certain functions on the phones.

7.2. Human wildlife conflict

In total, 554 records of human wildlife conflict were collected between July 2018 and January 2021 across the nine project villages, giving an average of 17.9 incidents per month over the data collection period. Of these, crop raiding accounted for 96% of incidents, with only three incidents each of homestead damage or injury, and two incidents of livestock predation. These figures represent the lower bound of HWC incidents over this period, as it is expected that not all incidents will have been reported to the scouts or recorded even when reported. However, the total number of recorded instances is a significant increase in comparison with the UWA data collected between August 2015 and July 2016 and therefore is likely to provide a more complete picture of the level of HWC within the project villages.

Significant temporal and spatial trends were observed in the data. For example, the number of recorded incidents ranged from six in Kahara to 98 in Kihura. It is difficult to know the reason for this disparity, although some data was lost due to technical faults with the smartphones. Some of the variation seen between villages is also likely due to differences in reporting of incidents to the scouts, as well as recording effort. A further factor that is likely to have affected HWC is the establishment of a trench to prevent elephants from entering project villages. Over the course of the data collection period, the length of this trench significantly increased. With respect to temporal trends, the HWC scout records again present a similar pattern to that seen in the UWA data, with a strong peak in June. However, the scout data also suggests a second stronger peak in November. Both these peaks are largely associated with maize cultivation, the primary staple crop grown in the project area. Unfortunately, it was not possible to assess trends over time using the scout data as many several factors will have influenced these trends, including phone malfunctions, variable data collection effort and increasing awareness among the general population leading to greater reporting.

The significant majority of recorded crop raiding incidents were caused by elephants leaving KWR, with 84% of records due to elephants and a further 14% due to primates (mostly baboons). Again, this corresponds with the UWA data, although the same caveats apply that there may be a preferential bias in the reporting of incidents of elephant-human conflict. The majority of the crop raiding incidents recorded were caused by small groups of elephants from single individuals to up to 15 animals. However, group sizes of up to 50 individuals were also recorded.

With respect to the amount of damage done, the majority of incidents were recorded as affecting only a single household or field. The average estimated area of damage was 320m², amounting to an average of 40% of each field’s total area of cultivation. However, it should be noted that the photographic evidence attached to each recorded incident does not support these estimates, showing significantly smaller areas of damage. In an assessment of 100 randomly selected records for which an accompanying image was recorded, 97% of photos showed some evidence of damage. However, the area of damage recorded was only considered to be fully supported by the photographic evidence in 11% of incidents. A further 25% of photos were considered to show a significant portion of the area of damage recorded. This left 64% of photos which failed to adequately provide evidence of the level of
damage recorded. Unsurprisingly, most of the damage was caused by crops being eaten, particularly when crops were recorded as being mature. However, 8% of the total damage was recorded as being caused by trampling of young crops. Of the crops most affected by HWC, maize was the dominant crop affected, accounting for 72% of the total area of estimated damage. Cassava was also significantly affected, accounting for 14% of the total area of damage. However, without accurate production figures for the project area, it is not possible to assess whether either crop was preferentially targeted.

In terms of protection, 83% of all estimated damage occurred in fields for which no form of protection was recorded. Unfortunately, in the assessment of the baseline data it became clear that the section of the form relating to the response to each incident was being left incomplete in the majority of entered forms. As a result, the form was revised to ensure that this section was completed. Following this amendment, 83% of incidents were recorded as having some level of response. The wildlife scouts were recorded as having been part of the response in a much higher proportion of cases than UWA rangers (78% for the wildlife scouts and 14% for the rangers). This demonstrates some of the benefit of having scouts in the villages as they are able to provide assistance to affected households more frequently than UWA rangers.

7.3. Indicator performance

Overall, the indicator had a mixed performance. Although data were collected in all villages with functioning phones, issues commonly associated with the use of volunteer data, such as variable effort and incomplete form filling, were observed. The biggest issue was the lack of support for the estimated area of damage for each incident of crop raiding from the accompanying photographic evidence. Inevitably, the process of estimating area is subjective, particularly from photographic evidence, so some level of difference is to be expected. However, it is unfortunate that the level of disparity observed between the photographic evidence and recorded assessments of area of damage reduces the potential for the scout collected human wildlife conflict data to bridge the perception gap relating to the severity of crop raiding between UWA and local communities. One solution to this issue would be to record an estimate of the number of plants affected in addition to estimates of the area affected. In many cases, this would be easier for the scouts to assess. It was notable that the majority of cases where the photographic evidence was considered to provide full support of the estimated area of damage corresponded to low estimates that are easier to judge. It is also recommended that emphasis be placed on capturing the full level of damage photographically so that area estimates and photographic evidence correspond more closely. This is not always straightforward where small plants have been trampled, which may not show up well in a wide focussed photo. Additional functionality can be added to the forms to allow for multiple photos to be taken so that both the area of damage and the type of damage can be detailed, although this would significantly increase the size of the datasets and might introduce issues around uploading or downloading the data.

A question remains regarding whether data collection should continue. Findings from the general population survey suggest that people not only consider it part of the duties of the scouts but also value having the damage caused by animals recorded, even if no further action is taken. However, it is not certain that this would be a sustainable situation. How the data will be used should also be considered. If the data is used by UWA to provide annual lower bound estimates of human wildlife conflict in the study area and these estimates are used to help guide management decision-making, then continued collection of the data would be worthwhile. However, it should be acknowledged that the data collection takes time and does not in itself help to reduce human wildlife conflict. As such, without ongoing analysis and use of the data, it would be an unfair burden on the scouts that provided little ongoing benefit. If the decision is taken to continue with the data collection, it is recommended that a review is undertaken of the platform used. Multiple technical issues were encountered during the project, including loss of data from malfunctioning phones, loss of accompanying media files, difficulties in uploading completed forms over mobile data connections and difficulties compiling individuals records into a larger dataset. Although most of these could be overcome, they required dedicated time from project staff that might not be available were UWA to take over data processing and analysis. Hence, the review should assess whether an alternative platform or simplified version of the data collection systems would better suit ongoing monitoring needs and capacity.
8. Discussion of project impact

The assessment of project impact incorporated multiple strands of enquiry focussing on different stages of the project theory of change to varying degrees of success. The overall picture of attitudinal change within the project villages was positive. There is widespread appreciation among both direct beneficiaries and the general population for both the wildlife scout and microenterprise programmes. This has helped to bridge some of the gap between UWA and local communities, which is evident from both the responses to the general population survey and the interviews with rangers stationed at KWR. As a result, people report that they are more likely to ask rangers for help in responding to incidents of human wildlife conflict and provide them with information about illegal activities. These findings provide support for key pathways in the project theory of change and suggest that progress towards the goal of reducing involvement in wildlife crime has been made within the project villages. However, direct evidence of this would be required to reach a firm conclusion. Unfortunately, the analysis of ranger patrol data was unable to find any difference in the occurrence of illegal activities in areas bordering project villages and similar control areas. Similarly, technical challenges meant that neither the tipoff reporting monitoring nor human wildlife conflict data can be used to assess project impact. As a result, although the attitudinal data provided a positive assessment for how project activities have influenced expected outcomes, it is not possible from the data available to accurately assess whether the project successfully contributed to its overall goal of reducing involvement in illegal activities.
Appendix A. Baseline/Endline attitude questions for inclusion in VE entry survey

**Attitudes**

I am going to give you a series of statements. For each statement, I would like you to give me an answer of I strongly disagree, I disagree, I’m neutral, I agree or I strongly agree. Alternatively, you can say you don’t know or would prefer not to say. There is no right or wrong answer – please just give me the answer that most closely matches your reaction to the statement.

S1. The actions of the Uganda Wildlife Authority and its partner organisations benefit your household.

S2. Your household has not benefited from tourist revenues being shared with communities living next to the conservation area.

S3. The sharing of tourist revenues has been fair and well managed.

S4. Your household is disadvantaged from living next to a conservation area.

S5. The protection of wildlife living inside the conservation area is important and worthwhile.

**Actions:**

For the following questions, I am going to ask you how likely you are to do something in a certain situation. I would like you to give me an answer of very unlikely, unlikely, neither likely nor unlikely, likely, very likely, or I don’t know/prefer not to say.

A1. How likely are you to call the wildlife scouts in your village for help if your crops are being damaged by wild animals?

A2. How likely are you to ask UWA for help if your crops are being damaged by wild animals?

A3. How likely are you to inform UWA about people you have seen or heard about breaking wildlife laws? For example, people hunting animals inside the park or taking part in illegal timber extraction or charcoal harvesting.
Appendix B. Questionnaire for non-participants

Personal and household data

How old are you?

What is the gender of the head of your household? M / F

How many people are in your household?

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of men</th>
<th>No. of women</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is your household’s main occupation?

No work / Farming / Pastoralism / Wage labour / Own business / Salaried employment

Perceptions of change in HWC

Over the past year, have you had any trouble with wildlife eating your crops or attacking livestock?

Yes / No / Don’t know / Prefer not to say

How severe would you rate this trouble with wildlife?

Not at all severe / Somewhat severe / Severe / Very severe / Don’t know / Prefer not to say

When you had this trouble with wildlife in the past year, did you receive any help?

Yes / No / Don’t know / Prefer not to say

Who from? [Select multiple options if required]

Local authorities / NGO / UWA / wildlife scouts / neighbours / relatives / other: ______________________

Over the past five years, have you experienced any changes in the severity of wildlife eating your crops or attacking livestock?

Yes / No / Don’t know / Prefer not to say

How has the severity changed?

Large decrease / Small decrease / Small increase / Large increase / Don’t know / Prefer not to say

Why do you think the severity has changed?
Over the past five years, have you experienced any changes in the frequency (how often it happens) of wildlife eating your crops or attacking livestock?

Yes / No / Don’t know / Prefer not to say

How has the severity changed?

Large decrease / Small decrease / Small increase / Large increase / Don’t know / Prefer not to say

Why do you think the frequency has changed?

---

**Awareness and perception of wildlife scouts**

Are you aware of the wildlife scouts in your village?

Yes / No / Don’t know / Prefer not to say

What do you think the wildlife scouts do?

---

Have you ever requested help from them?

Yes / No / Don’t know / Prefer not to say

Have you ever reported wildlife crop damage or livestock predation to them?

Yes / No / Don’t know / Prefer not to say

How do you feel about having wildlife scouts in your village?

Very unhappy / Unhappy / No feelings / Happy / Very Happy / Don’t know / Prefer not to say

Why is that?

---

Would you ever consider being a wildlife scout?

Yes / No / Don’t know / Prefer not to say

Do you feel there have been any benefits from having wildlife scouts in your village?

Yes / No / Don’t know / Prefer not to say

**Uptake of enterprise activities**

Do you grow chilli?

Yes / No / Prefer not to say
How many years have you been growing chilli? _____ years

Why did you first decide to grow chilli?

What has your experience been of growing chilli?

Very negative / Negative / Neither positive or negative / Positive / Very positive / Prefer not to say / Don’t know

Why is that?

Are you a member of a savings group?

Yes / No / Prefer not to say

How many years have you been a member? _____ years

Why did you first decide to join a savings group?

What has your experience been of the savings group?

Very negative / Negative / Neither positive or negative / Positive / Very positive / Prefer not to say / Don’t know

Why is that?

**Awareness and perception of enterprise activities**

Are you aware of the businesses supported in your village by the organisation called Village Enterprise?

Yes / No / Prefer not to say

Do you know anyone who has received support from this programme?

Yes / No / Prefer not to say

How do you feel about this programme?

Very negative / Negative / Neither positive or negative / Positive / Very positive / Prefer not to say / Don’t know

Why is that?
Do you feel there have been any benefits from having businesses supported in your village?

Yes / No / Don’t know / Prefer not to say

Relationship to the park

Has there been any change in how you view UWA rangers over the past 3 years?

Yes / No / Don’t know / Prefer not to say

How have your views changed over the past 3 years?

Much more negative / More negative / No change / More positive / Much more positive / Prefer not to say

Why is that?

If I told you that UWA has been supporting the wildlife scouts in your village would that change your opinion?

Yes / No / Don’t know / Prefer not to say

How have your views changed over the past 3 years now?

Much more negative / More negative / No change / More positive / Much more positive / Prefer not to say

[End interview – thank participant for their time]
Between 2014 and 2017, with support from the UK Government’s Illegal Wildlife Trade Challenge Fund, the International Institute for Environment and Development, the University of Oxford and the Wildlife Conservation Society Uganda programme, undertook research to explore the drivers, scale and scope of wildlife crime, and the effectiveness of interventions aimed at reducing it. This research showed that while poverty was one driver of illegal hunting and wildlife trade, resentment about high levels of human wildlife conflict also influenced behaviour. The research also found that activities designed to mitigate this were likely to lead to reductions in wildlife crime.

Although the Uganda Wildlife Authority has a community conservation programme to address issues such as human wildlife conflict and improve engagement, it has traditionally been hampered by limited resources and varying support. There is also often limited coordination between UWA and NGOs working around national parks to support community-based interventions to tackle wildlife crime. In order to improve the situation, the research team worked with UWA to develop National park level action plans for tackling wildlife crime. A key focus of these was striking a better balance between UWA-led law enforcement and community engagement activities, as well as integrating all activities aimed to address wildlife crime under single strategic plans. The Implementing park action plans for community engagement to tackle IWT project was subsequently developed to test the implementation of these plans as a means of measuring their effectiveness and providing further evidence regarding the potential for greater investment in community engagement as a means of addressing wildlife crime in and around Uganda’s national parks. The purpose of this report is to evaluate the evidence collected as part of the project and to examine any impacts the project may have had at key stages of the project theory of change.