

Final Evaluation Report

Your Details	
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Project Title	Promoting Conservation of the Eastern chimpanzees of Nyungwe National Park through creating Income Generating Activities (IGAs) to its surrounding Communities.
Application ID	30345-B
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1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Field reconnaissance, meeting with the local authorities to tell them in detail about the project and Pre assessment survey to get the baseline data on communities' livelihoods perceptions on chimpanzee conservation and the park as well.				This objective was assessed through working hand in hand with local authorities and park authorities. During the pre- assessment survey, we were working hand in hand with local authorities guiding us to the relevant households to be part of the project (belonging in 1 &2 socio economic classes) and gathering the baseline data on their socio-economic status. We were also assessing their level of understanding on the ecological and economical importance of chimpanzees and Nyungwe National Park to their livelihoods and what do they think are the threats that the chimpanzees are facing and how to overcome them.
Raising the level of understanding of local communities towards				During the pre assessment survey, we have seen that 86.8% went in the park for their related livelihoods activities. The majority (27.11%) told us that they go in the park for firewood collection while others went there for tree cutting for construction (19.74%). After conducting different awareness raising campaigns and training sessions, the communities' level of understanding has been raised to 96.5%.
Creating the income generating activities to the communities to reduce their dependency on the forest resources				The creation of income generating activities (IGAs) has been with a great contribution to sustainably conserve the protected areas and their biodiversity. The same for this project, 94.14% of project beneficiaries are positive that the created IGAs will undoubtedly

			<p>contribute to conserving the park and its resources because the communities are financially stable through selling their products. However, 5.86% of project beneficiaries were saying that these IGAs activities are not sufficient to finance their households. According to the findings, 96.5% of our project beneficiaries confirmed that they are no longer returning in the park to harvest its resources while 3.5% are still going back in the park for their daily livelihoods.</p>
Raising the awareness of communities towards the sustainable conservation of the chimpanzees and the park as well			<p>This project has raised the level of understanding at a significant level where after getting the knowledge about the ecological and economical importance of the park and its biodiversity, some communities took initiative of transferring knowledge where 77.6% of the communities who got knowledge were sensitising others about the ecological and economical importance of chimpanzees and the park in general.</p>
Increase the ownership of the communities on the conservation of the park and its biodiversity as well			<p>The accountability and ownership raised through this project is the best and long-term contribution for the sustainable conservation of Nyungwe National Park's biodiversity especially at Gisovu site. After getting knowledge about the ecological and economical importance of the park and its biological diversity, some communities (1.5%) are helping and alarming local authorities on the law enforcement while 20% are educating their children on the matter of chimpanzees' conservation and the park as well. Due to the level of ownership raised, there is no illegal case reported so far since we started conducting our projects at Gisovu</p>

			site. However, different illegal cases (mostly poaching) are being reported in other eastern and western sites of the park such as Kitabi and Cyamudongo forest fragment.
Encourage and engage women to be part of the solution towards the sustainable conservation of the chimpanzees and the park as well			This project intended improve the livelihoods of communities residing around Gisovu site of Nyungwe National Park but also to indirectly promote the conservation of its chimpanzees. However, it was also intended to encourage and engage women in conservation related activities because women are not getting involved in conservation activities at a significant level. Among our project beneficiaries, 73.56% were females while 26.46% were males. Educating a female is educating a nation and women are the household managers. So, educating and empowering them is with a great and long-term impact because women will transfer the skills and knowledge to their children.
Improve the health and financial status of vulnerable families to reduce their dependence on the park towards its sustainable management and conservation			According to the findings from the previous projects, we found that the communities were going in the forest due to the lack of alternatives and most of the persons caught threatening the park were classified in 1 and 2 socio economic classes. This is the reason why 76.57% of our project beneficiaries were from class 2 while 23.43% were from class 1.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

The following are the unforeseen difficulties that arose during our project implementation but thankfully we have adopted some strategies to tackle them:

- ♦ The project implementation started when the Covid-19 pandemic had arrived in the country where sometimes travels restrictions and partial and total lockdowns were present in different locations of the country including

Kigali city where researchers were based. To tackle this challenge, there were the possibilities of applying for travel clearance and we kept moving forwards to implement our project. As during our project implementation, our project site never faced a lockdown, the researchers were applying for travel clearance (for free of charge) and the project implementation was conducted successfully without any pronounced delay.

- ◆ Due to the Covid-19 pandemic, there were some preventives guidelines which were not allowing big gatherings. The instructions were not allowing meetings of more than 20 attendees. To overcome this challenge, we had several small campaigns to reach a significant number of attendees.

3. Briefly describe the three most important outcomes of your project.

1. Increasing the level of understanding and ownership through awareness raising campaigns and trainings towards sustainable conservation of the park and its biodiversity: During the pre assessment survey, we found that communities thought that the park is only important for firewood, source of trees for construction works, meat for consumption, source of medicinal plants, rain provision and revenues generation through tourism. None of respondents highlighted the importance of the park as the habitat for wildlife or erosion control. Also, when the respondents were asked what they think is the economic and ecological importance of the eastern chimpanzees on their wellbeing, all respondents responded that the eastern chimpanzees are important for meat and generate revenues through tourism. None of them responded that chimpanzees are very important for seed dispersion for forest diversity. After the project implementation, we have conducted a post assessment survey and we found a very significant change in their understanding.

For example, when we asked the respondents what they think is the importance of Nyungwe National Park, the majority said that the park provides oxygen, shelter for different animal species, rain provision, erosion control and revenues generation through tourism. However, some other respondents are still seeing the park as the source of medicinal plants and firewood. All respondents understood the ecological and economical importance of the eastern chimpanzees on the human wellbeing; all respondents said that the park is crucial for seed dispersion and revenues generation through tourism. No respondent replied that the park is very important for meat provision. Also, after learning how the park and chimpanzees are so important for their wellbeing, all respondents took initiative to be part of the solution through transferring knowledge and reporting whoever threatening the park and its biodiversity.

2. Theoretical and practical skills gained, communities livelihoods improved, and their financial status increased: The project beneficiaries gained different theoretical and practical skills of making different handcrafted products. After mastering the skills, the beneficiaries were equipped with materials, and they started making the products themselves and sell them. They are now

generating financial income through selling their products and this is helping them in their daily lives and being able to do some small savings.

3. Sustainable conservation of the park and its biodiversity: As communities are generating income through selling the products they produce; they are able to buy their basic needs, and this has reduced their dependence on the park.

4. Briefly describe the involvement of local communities and how they have benefitted from the project.

From the initial stage to the completion of this project, we were working hand in hand with local communities. During the selection of the project beneficiaries, we were working with village leaders to guide us to the households belonging in ubudehe categories 1 & 2 (socio economic classes 1&2). Also, as the project implementation was conducted during the Covid-19 pandemic, the local communities were assisting us in sanitising hands for participants, checking whether all participants were wearing masks properly and social distance was respected. The local communities were also given the time to give their testimonies about how they used to threaten the park and how the skills acquired have changed their mindset, behaviour and attitudes in terms of going back to the park and harvest its resources. The local communities were also sharing with their colleagues the lesson learnt about the ecological importance of the chimpanzees and the park as well. During the training sessions, the local communities were facilitating and assisting the trainers in aligning the training materials, and coaching trainees.

5. Are there any plans to continue this work?

Based on how the project has contributed to raising community awareness and improving their livelihoods, I am definitely planning to continue this work and my plan is to scale up the work to the other sites of the park where different repetitive illegal activities are being reported in different local newspapers.

The following are the tentative ways that I am planning to continue this work: Conducting education and awareness raising campaigns within youth and communities living in Nkungu and Nyakabuye sectors (Rusizi district) adjacent to Cyamudongo Forest Fragment of Nyungwe National Park (NNP) and Kitabi sector (Nyamagabe district) adjacent to Kitabi site of NNP. After educating and raising awareness within the youth and communities, we are planning to create some income generating activities for the communities such as poultry farming and teaching them how to make cooking stoves for use and selling and other craft works from wastes. This idea rooted from the repetitive illegal poaching and human-wildlife conflicts related cases which have been reported recently and according to the communities and local authorities, the root causes are limited knowledge about biodiversity conservation and lack of alternatives. In Kitabi sector around Nyungwe National Park, the local communities were caught selling the meat of a yellow-backed duiker poached in the park while other communities from Nyakabuye and Nkungu sectors in Rusizi District adjacent to Cyamudongo forest fragment (in the western part of the park) were found killing the mountain monkey with stones. The mountain monkey came outside of the park and communities thought that it came

to raid their crops as usual, and they have killed it with stones. The communities were saying that they are tired of suffering from hunger due to crop raiding while they don't cease to grow different crops and when they claim their loss, they do not get any compensation from the park as confirmed by the local authorities. It is unfortunate that communities are not aware about how-to live-in harmony with wildlife, and we believe that different education and awareness raising activities will be the best approach in changing the communities' attitudes and understanding towards the sustainable conservation of Nyungwe National Park and its wildlife as well. Also, the creation of off-farming activities will reduce the human-wildlife conflicts at a significant level, and it will also reduce the communities' dependence on the forest. This can be proven by the fact that since we started similar projects around Gisovu site, the illegal activities have been decreased at a significant level because the communities changed their attitudes, their level of understanding has increased and their dependence on the park's resources has been decreased significantly due to the created income generating activities. To ensure the sustainability of the project's contribution, we are planning to train local authorities, religious leaders, science teachers, youth representatives and environmental journalists so that the acquired knowledge could be transferred to a broad audience for a long-term contribution.

6. How do you plan to share the results of your work with others?

We are planning to share the results of our work in the following ways:

Publication of findings in a peer review journal: As we have already completed a report, now the next step is to prepare a manuscript to be submitted in a peer review journal for publication.

Newsletter and seminar: The CoEB have a bi-annual newsletter where there is room for research and publication and a weekly seminar series where different researchers share their works with a large audience.

Presentation at national or international conference.

Presentations at continuing educational services and verbal information at local unit meetings.

Having talk at salus radio and Ibinkikije online TV.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The grant was supposed to be used within 10 months, but it was used within 13 months due to the Covid-19 pandemic.

Overall	Activity	Anticipated time (Months)	Real time (Months)	Comments
Field preparation	<ul style="list-style-type: none"> - Apply for the research permit - Field reconnaissance visit - Make contact with local authorities, trainers, park authorities and other stakeholders - Pre assessment survey 	2	2.5	It took us extra 2 weeks to be able to meet with the local authorities because we were setting the date to meet with the 30345-Bm, and other conflicting urgent activities came in. We had to wait until we became able to meet with them because we wanted to explain to them our project in details and bless it before starting the implementation.
Project field work	Awareness Raising campaigns	1	2	We were planning to conduct big awareness raising campaigns but because of these Covid-19 pandemic preventive guidelines, the Ministry of Health in our country was not allowing gatherings of more than 20 attendees. So, we were conducting small awareness raising campaigns. Fortunately, time came, and the pandemic preventive guidelines have been changed and the venue was allowed to host 30% of its capacity. In order to benefit from these new guidelines, we were conducting our campaigns in the open spaces like gardens so that we can have a slight big number of attendees.
	Training sessions	2	3	The training sessions took extra one month because of the travel restrictions for some trainers due to the pandemic.
	Identifying selling points (markets)	1	1	On time
	Post assessment survey	1	1	On time
	Data Entry and cleaning	2	1.5	We have used less time compared to the planned one

Project analysis and reporting	Data analysis Final report compilation			because the project analysis and reporting team was very dynamic and skilled. They were also working over weekends in order to get the project's report done
Project findings publication	Research publication in a peer reviewed paper	2	2	On time

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Field reconnaissance (meeting with project beneficiaries and local authorities)	120	180	+60	As planned
Pre- assessment survey	360	360		As planned
Awareness raising campaigns	190	580	+390	Due to the pandemic which was not allowing us to have a big number of attendees, we had several small awareness raising campaigns, and this made us to add extra 180£
Beekeeping training sessions	1500	3000	+1500	1500£ was in kind contribution from trainer (time, skills and materials used)
Beehive's cost	800	800		As planned
Handcraft training expenses	4950	7500	+2550	2550£ is the in-kind contribution from trainer (time, skills and materials used)
Cost for handcraft equipments (raw materials and machines)	1600	2390	+790	790£ equal to the materials provided by the trainer as in-kind support
Mushroom farming training sessions	480	600	+120	As planned. 120£ is in-kind contribution from trainer
Sub-total	10000	15410	+5410	
Data entry and cleaning		300	+300	As planned. The budget was in-kind support from researchers (time and skills)

Data analysis		600	+600	As planned. The budget was the in-kind from researchers (time and skills)
Printing of final report		200	+200	As planned
Publication fees		100	+100	As planned
Research permit		45	+45	As planned
Project design		450	+450	As planned (In kind support from researchers)
Printing cost for training materials		100	+100	As planned
	10000	17205	+7205	The initial total project budget was 17,025 and 10,000£ was from The Rufford Foundation, 6410£ were the in-kind support from the trainers while 795£ were the researchers 'earnings.

9. Looking ahead, what do you feel are the important next steps?

As introduced in question number 5, based on how the project has been with a great contribution in changing the communities' livelihoods and attitudes on Nyungwe National Park and its biodiversity and how their level of ownership and understanding have been increased, we wish to scale up our project and the most next important steps are the following:

Education and Awareness raising activities in Nyamagabe and Rusizi districts adjacent to Nyungwe National Park.

We are thinking about scaling up our project to the other districts adjacent to the park due to the repetitive illegal cases (mostly poaching, tree cutting, and human wildlife related cases resulted from crop raiding) that have been reported recently. In Kitabi sector (Nyamagabe district), a group of five men have been caught recently selling meat of a yellow-backed duiker. Kitabi sector touches the eastern part of the park and different poaching cases are being reported where communities are poaching different animals to get meat for consumption or for selling. The crop raiding is also another issue where communities are always claiming that some animals come outside of the park to raid their crops and they are not getting any compensation; things that communities and local authorities are not happy with. In Rusizi district, we are planning to work with communities living in Nyakabuye and Nkungu sectors adjacent to the Cyamudongo Forest Fragment which is a home of different primates such as the eastern chimpanzees. The idea of working with the local communities living near Cyamudongo forest fragment rooted from the previous illegal cases reported where different human-wildlife conflicts are being recorded because of crop raiding problems. This is why the local communities are killing the animals which are coming outside of the forest for crop raiding. Not only this, but the illegal poaching cases have also been reported and the surrounding communities are the ones who are threatening the park's wildlife. We are planning to educate and raise the awareness within the youth and different community groups telling them that killing the animal is not the right solution and

showing them different ways of chasing the animals without killing or threatening them. We are planning to conduct different awareness raising campaigns and training sessions within youth, local authorities, science teachers, religious leaders, local authorities and environmental journalists, to develop teaching material and hand it to the teachers for use and make it available and accessible to everyone, produce a documentary film about the importance of the park to human wellbeing, produce and disseminate awareness raising materials to different places such as markets, churches and schools, conducting the youth competitions in painting, singing, writing and poster displays and create and brand the gender balanced club named " Rwanda Youth Primates Ambassadors".

Create Income Generating Activities to the communities:

Also, in order to sustainably preserve the park and its biodiversity and improve the living standards of communities, we are aiming at creating the off-farming activities such as poultry farming, making cooking stoves for selling and making handcrafted materials through wastes for selling. We are optimistic that once communities will have these incomes generating activities, this will reduce their dependence on the park, reduce human-wildlife conflicts and it will also improve their standards of living and financial status.

Gain theoretical and practical skills and Employment opportunity.

The project beneficiaries will gain advanced theoretical and practical skills from qualified trainers of each income generating activity that will be created while some other communities will get hired to work in these IGAs cooperatives that will be created.

Environmental Protection through wastes management

Our aim is to teach communities to recycle waste to produce different handcrafted products for selling or domestic use. This will be a sustainable win-win solution for communities' livelihoods and environmental protection through waste recycling. For example, by selling the produced handicrafts, cooperatives members will earn financial income, and this will help them to improve their nutritional and health status, increase of domestic production, reducing poverty, food security, small savings, extend businesses and ability to get some loans and be able to repay them.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, the Rufford Foundation logo was used in all materials produced in relation to this project. The logo was used on the project proposal submitted to the authorities for permit and also to the project summary shared with the local authorities and park authorities as they have requested as to submit it to them. Also, on the questionnaires produced for pre- and post-assessment surveys and the banner as well. For any activity that we were going to carry out, we were telling the participants that the project has been funded by the Rufford Foundation. From the mayor of the district to the local communities (project beneficiaries), everyone got a chance to know who funded the project and this was a good opportunity to tell them in detail who does The Rufford Foundation do in line with sustainable

biodiversity conservation in the world especially in Rwanda which is known as a biodiversity hotspot. The continuous support from The Rufford Foundation was acknowledged and appreciated by everyone and they were saying that they cannot find the right words to express their gratitude to The Rufford Foundation for this support especially during this pandemic.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Jeannette Batamuliza: She was the project team leader and the project coordinator from the initial stage to the project's completion. After submitting a report, she will start working on a project manuscript for publication.

Doreen Ingabire: She was in charge of developing the training manual and conducting trainings for knitting and weaving. She was also helping in data analysis and reporting

Chantal Mukamazimpaka: She was in charge of developing the training manual for sewing

Kizito Bucyansenga: He was in charge of developing the training manual and offering training for mushroom farming and production. He also helped in awareness raising campaigns

Ferdinand Ndayishimiye: She was in charge of developing the training manual and offering the training in beekeeping. He also helped in the awareness raising campaigns

Marie Louise Ingabire: She helped in data entry, cleaning and analysis. She was also part of the team during awareness raising campaigns

Vincent Habumukiza: He is a science teacher who worked with us during the previous project. So, in this project, he was facilitating the trainings and awareness raising campaigns

Grace Umuhoza: She was the winner during the students' competitions for the previous project. Grace was facilitating the awareness raising campaigns, trainings and post assessment survey

Fabrice Shyaka: He was also the winner of the students' competition, and he was assisting in pre assessment survey, awareness raising campaigns and trainings

Sandrine Ishimwe and Diane Uwase: They were the winner for the students' competition for the previous project and they were in charge of making sure that the attendees (for trainings and awareness raising campaigns) were following the Covid-19 pandemic preventive measures such as social distance, wearing face mask properly and washing hands were being respected.

12. Any other comments?

We do not have any specific comment apart of expressing our gratitude to The Rufford Foundation for financing our project. I appreciated how you are encouraging and supporting the young researchers to put their ideas into actions to reach their dreams. Honestly, I can't say that I would love community conservation, environmental education and primates' conservation as I do today if I didn't get your support! The Rufford Foundation has been my motivation; increase my ownership, enthusiasm and passion towards sustainable conservation of the primates. You really shaped me, and I am who I am because of you! I can't really thank you enough!

On behalf of all earlier career female conservationists in Rwanda I thank you so much for your continuous support!

ANNEX

- Data Analysis & Results
- Pre & Post Assessment Survey Questionnaire

Data Analysis & Results

All data were managed and analysed using SPSS Version 16.0 statistical software. I checked and ensured that the assumption of multi-collinearity (heavily related variable) had not been violated by having variables that were too closely related to one another by checking the Pearson Correlation coefficient, the tolerance level and the Variance Inflation Factor (VIF) values between predictive variables as suggested by Gronk B., 2012 & Field, 2009. After the preliminary analyses, a multiple linear regression analysis was conducted to examine the relationship between dependent and independent variables of this project. According to Field 2009, regression analysis enables us to predict future (outcomes) based on values of predictive variables.

Given the size of population used for this project, the backward method of linear multiple regressions was used to calculate the contribution of each predictive variable by looking at the significant value of the t-test for each predictor. If a predictor met the removal criterion, it was removed from the model (Field, 2009: pg 213) and any remaining variable would then be assessed to determine their contribution to the dependent variable.

Descriptive statistics of the participants:

The sample for this project was comprised of 461 persons residing in Mutuntu and Twumba sectors adjacent to Gisovu site of Nyungwe National Park, in Karongi district, Western Province, Rwanda. Within 461 persons in Twumba and Mutuntu, I chose to create 32 groups of income generating activities as follow: sewing practices (3), beekeeping (4), mushrooms farming and production (3), knitting practices (3) and weaving (3) for each sector.

Table 1: Composition and distribution in groups of activities generating incomes.

		Frequency	Percent	Valid Percent
Valid	Sewing	122	26.4642082	26.46
	Beekeeping	102	22.1258134	22.13
	Mushrooms farming and production	114	24.7288503	24.73
	Knitting	73	15.835141	15.84
	Weaving	50	10.845987	10.85
	Total	461	100	100

The 26.46% of participants in this project were in sewing practices, mushrooms farming, and production (24.73%) followed by beekeeping activities (22.13%) and knitting practices (15.84%) as well as weaving (10.85%). The criteria for selection were being in social economic categories (ubudehe) 1&2, level of education and willingness to participate.

We made a random selection while considering the project beneficiaries who met the selection criteria.

Table 2: Gender and socio- economic category distribution *social economic category is called ubudehe*.

		Frequency	Percent	Valid Percent
Valid	Male	122	26.46	26.46
	Female	339	73.54	73.54
	Total	461	100	100
		Frequency	Percent	Valid Percent
Valid	Ubudehe 2	353	76.57	76.57
	Ubudehe 1	108	23.43	23.43
	Total	461	100	100

The project had more women (73.56%) than men (26.46 %). 76.57% of all participants were in social economic category 2 while 23.43% were classified in socio economic category 1 as presented in table 2 above.

Table 3: Education status

		Frequency	Percent	Valid Percent
Valid	No school attended	386	83.73	83.73
	Primary not completed	65	14.10	14.10
	Only some technical training	10	2.17	2.17
	Total	461	100	100

Participants in this project did not complete primary school (14.10%), 83.73% did not attend any school program while 2.17% got some technical or practical trainings.

Before implementation of this project, 86.8% of interviewed households' members agreed that they have crossed the boundaries of the park for their livelihood activities whereas 12.8% were not regularly crossing park boundaries.

Table 4: Reasons of crossing the park's boundaries

		Frequency	Percent	Valid Percent
Valid	Visiting	2	0.43	0.43
	Firewood	125	27.11	27.11
	Poaching	9	1.95	1.95
	Honey harvest	41	8.89	8.89
	Raw materials for handcrafts	60	13.02	13.02
	Trees for construction	91	19.74	19.74
	Medicinal plants	64	13.88	13.88
	Food products (mushrooms, fruits etc)	30	6.51	6.51
	Trees for agriculture practices	24	5.21	5.21
	Collecting grasses for livestock	15	3.25	3.25
	Total	461	100	100

Firewood and cuttings trees for construction were the most dominant reasons of crossing the park's boundaries (27.11% and 19.74% respectively) followed by medicinal plants and handcraft raw materials collection (13.88% and 13.02% respectively). Few persons have crossed the park's boundaries for visit (0.43%)

Following awareness raising campaigns held on Nyungwe National Park and the Eastern chimpanzee's conservation: 96.5% of participants did not return to the activities that were predisposing the park and chimpanzee conservation and this brought a positive impact on the park's protection. However, 3.3% of participants said that one or more member of their households were still going in the park for activities perceived as illegal. Furthermore 77.6% are sensitizing and sharing skills/ knowledge to others about the ecological and economical importance of Nyungwe National Park and chimpanzees and their conservation. Also, 1.5% of respondents said that they are contributing to law enforcement through reporting anyone seen threatening the biodiversity whereas 20% educate their children on the matter of park and chimpanzee conservation.

Table5: Perceived sustainability of the created activities generating income on household financing.

		Frequency	Percent	Valid Percent
Valid	1 yes	434	94.14	94.14
	2 No	27	5.86	5.86
	Total	461	100	100

Participants in this project perceived these income generating activities as sustainable pathway to improve their livelihoods and financial status if well managed (94.14%) while (5.86%) perceived them as insufficient to finance their households.

Their overall perception on shared assets and ownership within group is ranked from excellent (56.40%) to very good (23.43%) and good (9.32%) and only (10.5%) did not acknowledge equality in shared assets as illustrated by the following table 6.

Table 6: Shared assets and ownership within the group

		Frequency	Percent	Valid Percent
Valid	Excellent	260	56.40	56.40
	Very good	108	23.43	23.43
	Good	43	9.32	9.32
	Not at all	50	10.85	10.85
	Total	461	100	100

Regression analysis and inferential statistics

This project was conducted to determine if diversification of activities generating income in local community living around Nyungwe National Park, can predict their individual and collective shaped attitude on chimpanzees' conservation as well as Nyungwe National Park.

Dependent variable was a shaped attitude on conservation of Nyungwe National Park and chimpanzees.

It was hypothesized that factors in diversification of activities generating incomes in local community such as gender, education status ,forest dependencies' tendency, perceived financial sustainability of created activities, households social economic categories, conservation awareness levels, groups composition, level of threatening chimpanzee, type of activities created: Knitting practice, beekeeping practices, mushroom farming and production, weaving practice; ownership and equity in shared assets and resulted perceived financial gains at households level would positively predict the park and chimpanzee conservation sustainability and changes in attitudes of the concerned local community.

To test that hypothesis H1, lineal multiple regression analysis is used, and results show a significant effect on overall shaped attitudes of the communities and the sustainable conservation of Nyungwe National Park and its Eastern chimpanzees as well.

The retained factors for this study are: Gender, education status, ecological consideration of chimpanzees, awareness raising level, forest dependency, perceived park contribution, direct impact of income generating activities, chimpanzee threatening behaviours', uniqueness of chimpanzees, sustainability in household financing, shared assets and ownership within groups.

The communities' attitudes on Nyungwe National Park and chimpanzee conservation and importance are statically significant by factors for diversification of activities generation income in this local community. A significant regression equation was found ($F(10,447) = 279.731$ and $p < 0.001$ and $R^2 = 0.862$) which indicates that such factors in diversification of income generating activities in a community can play a significant role on park and chimpanzees' conservation.

These results clearly direct the positive effect of these factors on Nyungwe National Park conservation sustainability. Moreover, the adjusted $R^2 = 0.859$ depicts that the model explains 85.9 % of variance in shaping attitude on park and chimpanzee conservation can be accounted for collectively these listed several factors for diversification income generating activities.

Looking at the individual contribution and weights of these predictors in the model: The results show that six factors of the model were statistically significant: The park's contribution to local community ($B = 0.318$, $\beta = 0.552$, $t(10) = 15.492$, $p < 0.001$) , education status ($B = 0.392$, $\beta = 0.479$, $t(10) = 16.769$, $p < 0.001$), the forest dependency was statistically significant with ($B = 0.075$, $\beta = 0.062$, $t(10) = 3.330$, $p < 0.001$), the sustainability in households financing ($B = 0.129$, $\beta = -0.084$, $t(10) = -3.122$, $p < 0.001$), awareness raising level ($B = 0.061$, $\beta = 0.014$, $t(10) = .525$, $p < 0.001$) and shared assets as well as ownership in group ($B = -0.034$, $\beta = -0.094$, $t(10) = -2.224$, $p = 0.027$).

The results of this project show that the dependent variable: Shaped attitude on Nyungwe National Park and chimpanzee conservation was positively predicted by

these six core factors through income generating activities as they were statistically significant in regression equation with their respective weights in the model.

As an example of each factor weight in equation, an increase of a thousand units in education status would positively impact 392 households' attitude on national park and chimpanzee conservation and may partially explained by easiness in joining these activities ($B=0.392$, $p<0.001$).

The weights of Park contribution to local community show that an increase of a thousand units in park contribution to local community would positively impact 318 households' attitudes on the park conservation and chimpanzee as well and may partially explained by dependency on the forest for living ($B=0.318$, $p<0.001$). The sustainability in financing households follows with ($B=0.129$, $p<0.001$), forest dependency level ($B=0.075$, $p<0.001$), shared assets as well as ownership in group ($B=-0.034$, $p=0.027$) and raising awareness level ($B=0.061$, $p<0.001$).

However, the gender ($p= 0.128$), chimpanzee consideration ($p= 0.568$), uniqueness of chimpanzee ($p= 0.178$) and level of threatening chimpanzee ($p= 0.360$) were not statistically significant in this model.

Multiple lineal regression outputs

Table 7: Model summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.929 ^a	.862	.859	.136
a. Predictors: (Constant), motive of chimpanzee threats, community awareness level on park preservation, gender, households' sustainability in financing, forest dependencies tendency, status of activities on conservation, chimpanzees' economical consideration, education status, perception on conservation of park and chimpanzees, shared assets and ownership and equity of the group				

The table 7: Shows the results of the predictive variables in multiple regression analysis 85.9% of the variance is explain in the predictors of the variables (adjusted R square $0.859 \times 100 = 85.9$).

ANOVA^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.728	10	5.173	279.731	.000 ^a
	Residual	8.266	447	.018		
	Total	59.993	457			
a. Predictors: (Constant), motive of chimpanzee's threats, community awareness level on park conservation, gender, sustainability in financing households, forest dependencies tendency, status of activities on conservation, chimpanzees' economical consideration, education status, perception conservation of park and chimpanzee, shared assets and ownership and equity of the group						
b. Dependent Variable: Shaping attitude on chimpanzee and park conservation						

Table 8: Predictive variables used

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.135	.066		-2.050	.041
	Forest dependencies tendency	.075	.022	.062	3.330	.001
	Status of activities on conservation	.005	.005	.017	.916	.360
	Perception conservation of park and chimpanzee	.318	.021	.552	15.492	.000
	Community awareness on park preservation	.061	.014	.198	4.525	.000
	Education status	.392	.023	.479	16.769	.000
	Sustainability in financing households	-.129	.041	-.084	-3.122	.002
	Shared assets and ownership equity of the group	-.034	.015	-.094	-2.224	.027
	Gender	.022	.015	.027	1.519	.129
	Chimpanzees' economical consideration	.003	.005	.011	.571	.568
	Motive of chimpanzee's threats	.011	.008	.026	1.348	.178
a. Dependent Variable: Shaping attitudes on chimpanzee and the park's conservation						

Histogram

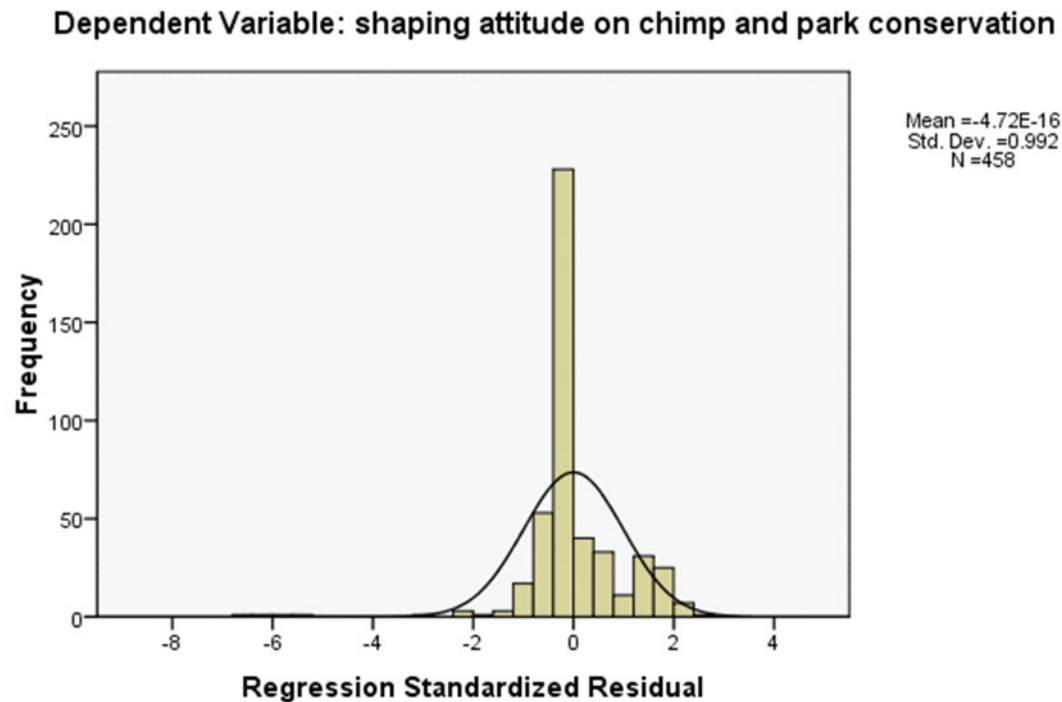


Figure 1 shows the histogram a bar type graph for quantitative data. It was developed from the dependent variable shaping attitude on Nyungwe National Park and chimpanzee conservation and the ten predictive variables. The common boundaries between adjacent bars emphasize the continuity of the data as with continuous variables. The graph shows that a dense concentration of the predictive variables has an impact on Nyungwe National Park conservation attitude and the highest bars have the greatest impact on the park conservation attitude.

References

Gronk, B. (2012). How to use SPSS statistics: a step –by- step Guide to analysis and interpretation. Pyrczak Pub.

Field, A. (2009). Discovering statistic using SPSS (3rd ed.) London: SAGE Publications Ltd.



Pre & Post Assessment Survey Questionnaire

Gender:

Male

Female

Socio-economic categories:

1

2

Have you or your colleague ever been in Nyungwe National Park?

Yes

No

If yes, what was your purpose?

Visiting the park

Collecting firewood

Poaching

Harvesting honey

What do you think is the importance of the Nyungwe National Park (NNP)?

Oxygen provision:

Habitat for wild animals

Rain provision

Firewood provision:

Tree for construction

Meat for consumption or selling

Revenues from tourism

Source of medicinal plants

Erosion control

Soil fertility

None

What is the ecological and economical importance of the Eastern chimpanzees to your wellbeing?

Meat provision

Revenues generation through tourism

Seed dispersion

None

What are some threats that the Easter chimpanzees of NNP are facing?

Poaching

Tree cutting

Living near the park

None

How do you think the Income Generating Activities will contribute in the Eastern chimpanzees' conservation of NNP?

Poaching decreased

Illegal tree cutting decreased

Chimpanzees' food increased

Chimpanzees' habitat increased

Improved livelihoods

No change
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