

## Contribution of Ecotourism to the Conservation of Nyungwe National Park in Rwanda

Ange Imanishimwe<sup>1,2\*</sup>, Venuste Nsengimana<sup>3</sup> and Concorde Nsengumuremyi<sup>4</sup>

<sup>1</sup>University of California, Berkeley, USA

<sup>2</sup>Biodiversity Conservation and Ecotourism Development, Biocoop, Rwanda

<sup>3</sup>College of Education, University of Rwanda, Rwanda

<sup>4</sup>Department of Forestry Resources Management, Kitabi College of Conservation and Environmental Management, Rwanda

### Abstract

This study focused on the contribution of ecotourism to the conservation of Nyungwe National Park in Rwanda (NNP). It critically examines the integration of local communities in conservation of Nyungwe National Park and the contribution of the ecotourism's revenue sharing to community development. We present empirical data from interviews, a predesigned questionnaire, Range Based Monitoring (RBM) data and data from tourism unit in Nyungwe National Park. Results showed that community conservation efforts have been put in place to reduce threats in the park, but still, there are cases of poaching, tree cutting and mining, cited among many other illegal activities. The number of tourists increased considerably in recent years, suggesting in revenue sharing. However, community based initiatives are still at low levels and the expected objective to alleviate poverty is not yet fully achieved. Research concluded that there is a need to improve the revenue sharing program so that it will contribute to the community development and motivate people to effectively participate in the conservation of Nyungwe National Park.

**Keywords:** Ecotourism; Revenue sharing; Community conservation; Community based tourism; Conservation tourism; Nyungwe National Park

### Introduction

Protected areas are the cornerstones of biological conservation [1]. Although they have usually been set aside from human exploitation, it is now increasingly recognized that protected areas should play a role in sustaining local communities adjacent to them [2-4]. One of the most common uses of protected areas is tourism, with the potential to generate sustainable local benefits from wildlife tourists [5].

Around the 1980s, the term ecotourism emerged as a direct result of the world's acknowledgment of sustainable and global ecological practices [6]. Ceballos-Lascurain [7] articulated one of the most influential definitions of ecotourism as traveling to relatively undisturbed or uncontaminated natural areas with the specific objectives of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations found in these areas. As ecotourism has grown in popularity, its definitions have been expanded to incorporate ideas about ecotourism responsibility, environmentally friendly destination management, and sustainable development of local human populations [5,8]. It has been embraced by many developing countries that are home to many of the world's rare and threatened species hoping to improve their economies in a way that is environmentally sustainable [9].

The relationship between biodiversity conservation and ecotourism development can be mutually beneficial as they can support each other's goals [7,10]. Conservation organizations fund community based ecotourism as a means of reducing local threats to biodiversity, such as expanding agriculture, unsustainable harvesting of wild plants and animals, and killing wildlife that threatens crops, livestock or humans [11]. The premise is that ecotourism depends on maintaining attractive natural landscapes and a rich flora and fauna; therefore, helping communities earn money from ecotourism by providing both an incentive for conservation and an economic alternative to destructive activities should reduce threats to the protected areas [12].

This study explored how the integration of biodiversity conservation and ecotourism development contribute to poverty alleviation around NNP in Rwanda. The main objective was to assess the role of ecotourism towards biodiversity conservation and rural poverty reduction around NNP. Specifically, the objectives of this research were to (1) identify existing opportunities and constraints to ecotourism development in and around NNP, (2) assess local community engagement in ecotourism development around NNP, (3) assess the contribution of ecotourism to biodiversity conservation in NNP, and (4) assess how ecotourism projects have reduced threats to biodiversity and illegal activities in the park through the reduction of rural poverty around NNP.

### Methods

#### Study area

This research took place in NNP one of the largest African high altitude forests, covering a surface area of 1,013 km<sup>2</sup>. It was established in 2005 and has been under protection since 1993, when it was first gazetted as a reserve [13]. In 1984, a buffer zone around the park was established as a response to rapid deforestation and with the main purpose for protecting the forest's core and reduce contact between the reserve's wildlife and local population [14]. By 1992, more than ten thousand hectares (ha) of nonnative forest had been planted, and in 2011 The New Forests Company (NFC) received management rights over 8,500 ha [13] (Figure 1).

**\*Corresponding author:** Ange Imanishimwe, University of California, Berkeley, USA, Tel: +250788840755; E-mail: [angeish07@gmail.com](mailto:angeish07@gmail.com)

Received April 03, 2018; Accepted April 21, 2018; Published April 28, 2018

**Citation:** Imanishimwe A, Nsengimana V, Nsengumuremyi C (2018) Contribution of Ecotourism to the Conservation of Nyungwe National Park in Rwanda. J Tourism Hospit 7: 348. doi: [10.4172/2167-0269.1000348](https://doi.org/10.4172/2167-0269.1000348)

**Copyright:** © 2018 Imanishimwe A, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

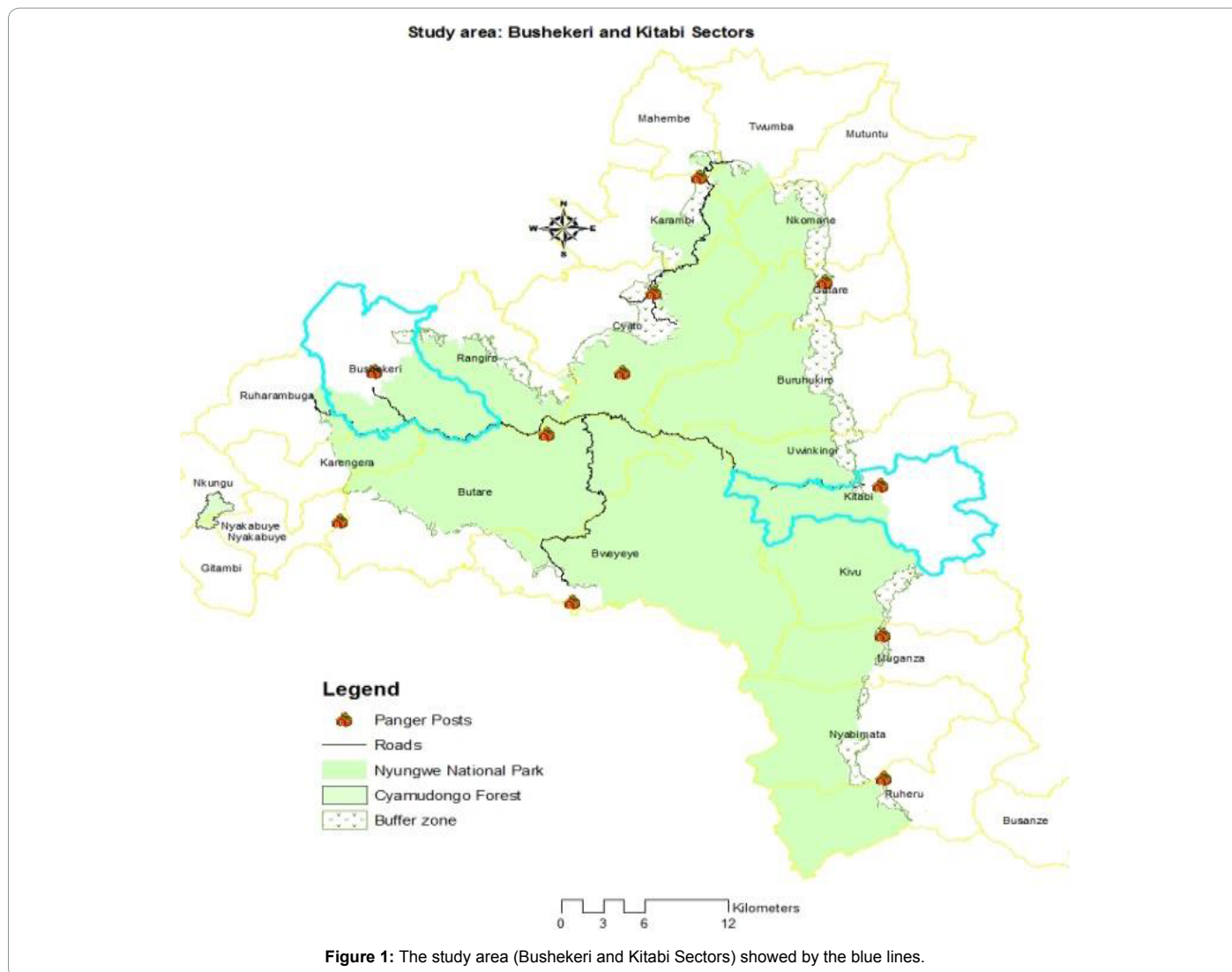


Figure 1: The study area (Bushekeri and Kitabi Sectors) showed by the blue lines.

The Park is known at an international level due to its richness in fauna and flora [15], with some unique species only found in the Albertine Rift [16]. It is located between a latitude of 2°15' and 2°55' south and longitude of 29°00' and 29°30' east, at an elevation varying between 1,600 m and 2,950 m, with Bigugu around Uwinka the highest top of the mountain [17]. This forest is continuous with Kibira National Park in Burundi [18].

### Data collection

The research was conducted in households around NNP, in two sectors: Kitabi Sector of Nyamagabe District, and Bushekeri Sector of Nyamasheke District. These locations were chosen based on the presence of ecotourism projects, where cooperatives received support through revenue sharing. Data were collected over a one month period starting from 26 February to 26 March, 2015. For each cell located in Kitabi and Bushekeri sectors, ten local leaders, ten local farmers, ten members of cooperatives or affiliates of companies around NNP, and ten employees of Rwanda Development Board and Wildlife Conservation Society/Projet Pour la Conservation de la Foret de Nyungwe (WCS/PCFN) were selected purposively for interview and for household survey [19].

Pre-designed questionnaires [20] were used to identify existing opportunities and threats for the conservation of NNP, to assess the engagement of local communities in ecotourism and conservation to NNP and the impacts of ecotourism on threats and illegal activities in NNP. Both open-ended and closed questions were used, and questionnaires were filled out individually. Ranger Based Monitoring (RBM) data from 2003 to 2013 were collected from the Unit of Research, Planning, and Monitoring at RDB offices for information on illegal activities in NNP including poaching, mining, and bamboo cutting [21]. The Management Information System and Technology (MIST) and the Geographical Information System (GIS) were used to analyze RBM data. Threats were categorized as high, moderate, and low due to their frequency. In addition, data on the statistics of tourists visiting NNP data were collected in the tourism unit of RDB's offices in NNP.

### Data analysis

Coding was used to analyze the data from open the survey. Responses from questionnaires were read and demarcated into segments, and this was done at different times throughout the process. Each segment was labeled with the phrase related to the research

objectives. Data obtained after coding were analyzed based on the frequencies of responses within each topic and grouped into categories applying descriptive statistics by using Statistical Package for the Social Sciences (SPSS), version 20.

## Results

Nearly 90% of the participants in this study were between 18 and 50 years old while only 10% were greater than 50 years old. In total 22.5% of participants were female, while 77.5% were male. Concerning their level of education, only 2.5% did not attend any school, 55% completed primary education, 27% secondary education and only 15% had a university education. All participants having the university degree were RDB and WCS staff members. Results showed that all local leaders (15%) live at a distance less than 5 km from the Park, while all local farmers, business owners, RDB and WCS staff (75%) live at a distance varying between 5 and 10 km from the Park.

Data collected from RBM showed that snares (43%) and tree cutting (12%) activities come at the frontline of illegal activities recorded between 2003 and 2013. Other illegal activities recorded include people walking in the park, bamboo cutting, beehives, fire

pits, mining, poaching, cows crossing the park, agriculture, bush fires, honey collection, debarking of trees, mushroom collection, and medicinal plant collection (Figures 2 and 3).

Respondents (77.6%) stated that this increase may be related to low, low education, bad attitude, high population growth, unemployment and extreme poverty of some families around NNP. A certain number of participants (42.5%) in Kitabi sector did not want to say that illegal activities still exist in NNP. When we asked the reasons for this attitude, few of them (5%) replied that it is because some of them have relatives who do some illegal activities in NNP. All the people (100%) in Bushekeri sector listed snares and tree cutting as the most known illegal activities, which were confirmed in the findings from the RBM data. However, water pollution, forest pollution, and vehicle accidents are threats mentioned by the local community which were not confirmed by RBM data, as they were not recorded in the RBM data.

Frequencies of high threats (Figure 4) moderate threats (Figure 5) and low threats (Figure 6) are various. Some of them such as debarking trees, mushroom collection are recognized by RBM but they were not mentioned by research participants, while others such as beekeeping,

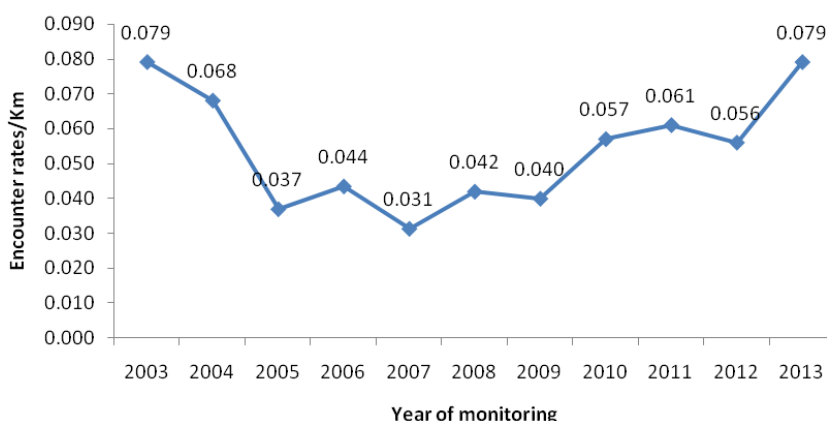


Figure 2: Encounter rates of illegal activities in NNP (2003-2013).

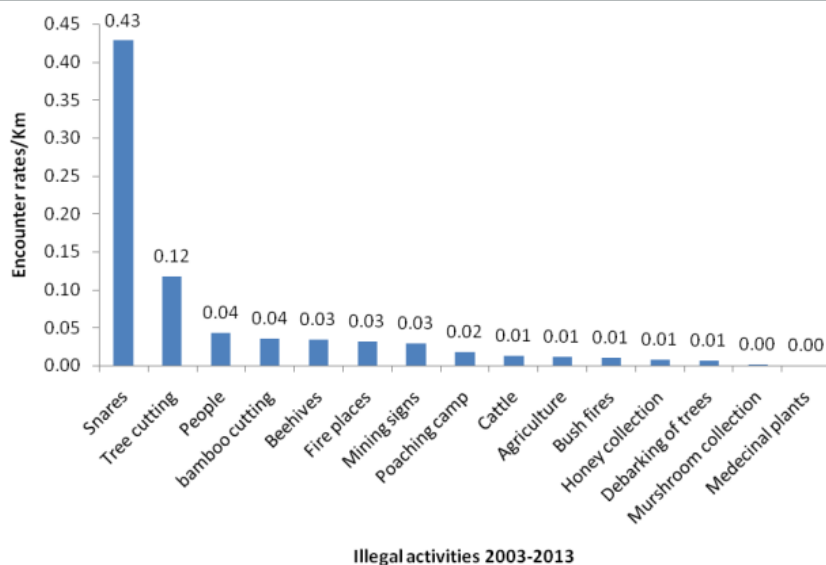


Figure 3: Average of encounter rates of illegal activities in eleven years (2003-2013).

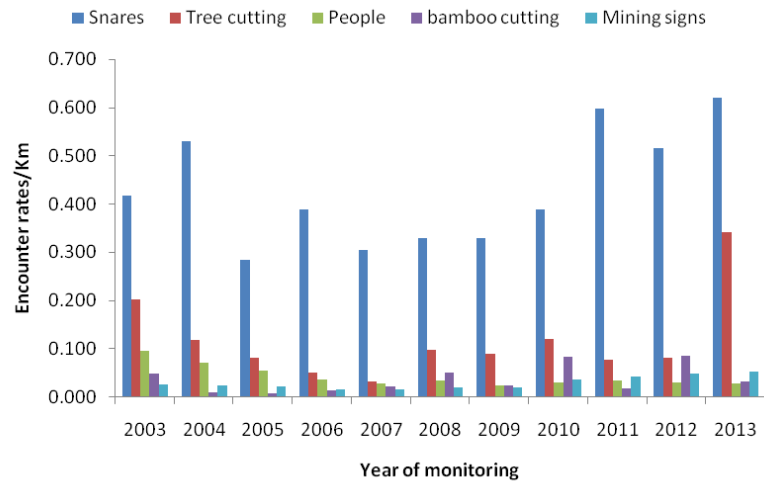


Figure 4: Frequency of high threats in NNP from 2003 to 2013.

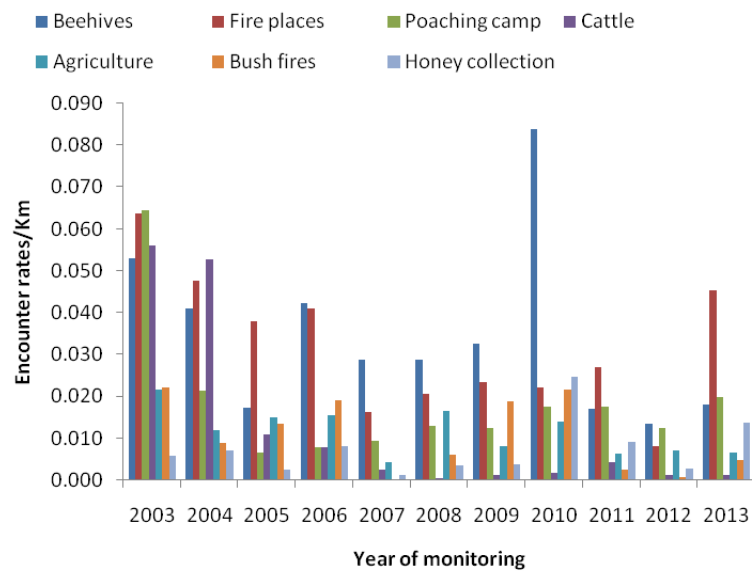


Figure 5: Frequency of moderate threats in NNP from 2003 to 2013.

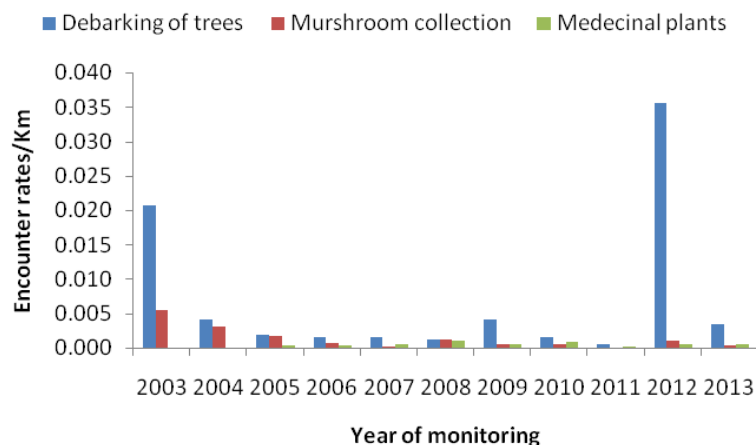


Figure 6: Frequency of Low threats encountered in NNP from 2003 to 2013.

honey collection, bush fire and agriculture are occurring in RBM data and have been mentioned by 72% of the participants.

The months of May and December 2014, had high rates of encountered illegal activities. Around 69 rangers were deployed to 11 ranger posts and every post had a staff of five or six in 2014. Rangers surveyed 7847 km of forest and performed 2,172 patrols. Many threats were observed in April, May, June, and December, while the lowest rate of threats was observed in August. During 2014 year, 93 people were arrested for illegal activity in the park, including 76 poachers, 26 miners, and one farmer (Figures 7 and 8).

Concerning the knowledge of what is ecotourism and its importance, respondents have various and different understanding. Around 47.5% defined ecotourism as income generating activities, while 30.5% defines ecotourism as activities attracting tourists to visit the country. Others (22%) did not know what ecotourism is, and did not know any of the benefits and importance of ecotourism, while (76%) stated that ecotourism takes care and conserve NNP. Almost all respondents (92%), said that they have never been integrated in any ecotourism activity, except some who sometimes had a job in NNP. About the half participants (52.5%) did not know what the revenue sharing program is and how the revenue sharing program is calculated, given and used. Only 40% of business owners said that they are involved in ecotourism industry in and around NNP.

The number of tourists in NNP has been changing since 1995. During this year, it was visited by only 157 ecotourists. The number decreased between 1996 and 1997 due to the insecurity in the country and only 65 tourists visited NNP in 1997. From 1998 to 2000 the number of tourists began to increase from 225 to 777 tourists respectively and then decrease to 646 in 2001. Since 2002, the number of tourists increased from 707 tourists up to 9506 tourists in 2014 (Figure 9).

### Discussion

The results of this study indicated that NNP is facing various threats, mainly the use of snares and tree cutting. The level of community engagement is at a low appreciation and the effective use of revenue sharing is critical. The increased number of tourists visiting NNP indicated by the results of this study should in turn contribute to the poverty alleviation and hence reduce illegal activities, as ecotourism is appreciated to improve the livelihoods of the local communities through revenue sharing, hence enhance biodiversity conservation [22].

A research conducted about the revenue sharing in Rwanda, indicated that revenue sharing program had improved the quality of life of people living nearby Nyungwe national park, and particularly, there was improvement on the income levels of residents as a result of various projects established and supported through revenue sharing

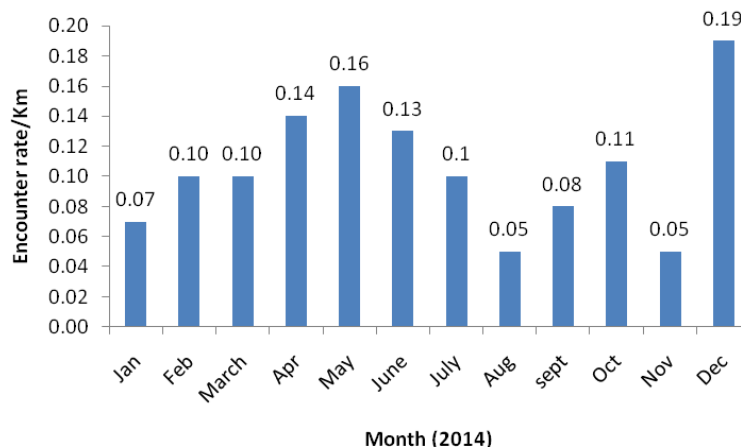


Figure 7: Monthly observation of threats and illegal activities in NNP in 2014.

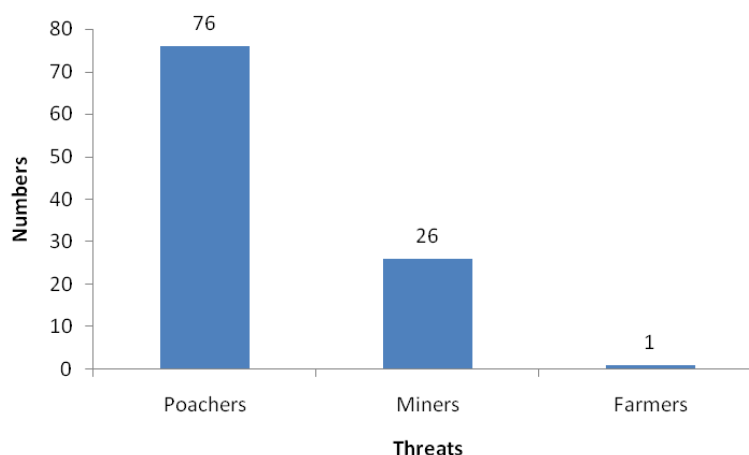


Figure 8: People arrested for illegal activities in NNP in 2014.



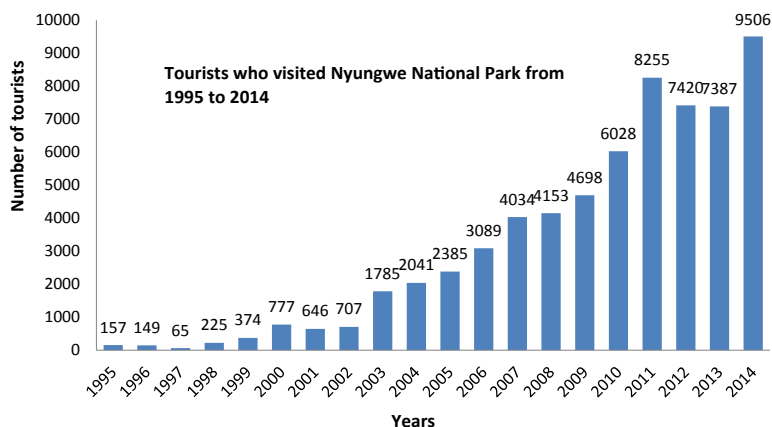


Figure 9: Tourist visits to NNP from 1995 to 2014.

[23]. However, it is not clear why these positive changes do not contribute to the conservation of NNP, because negative effects are likely to occur, when there is no significant effect of revenue sharing on local livelihoods [11].

Various authors traced the root of the problem in the process establishing the revenue sharing policy. Beyond of getting money and change in livelihood, ecotourism requires that life of local communities adapt themselves to a different regime of wildlife exploitation, which imposes a view of the local life that is not necessarily in agreement with the real livelihoods of the local communities [24]. In addition, even though the benefits from ecotourism are valuable, they can still play an important role in increasing the means of living of local communities relative to a benchmark situations often characterized by poverty and isolation [25].

A previous study of ecotourism in NNP indicated that the little active involvement of local communities in the park's conservation and protection is based on a lack of community empowerment through community conservation outreach and unfair tourism revenue sharing projects [26]. Or, people around protected areas deliberately protect biodiversity in order to protect the income generated from ecotourism and draw local labor and capital away from biodiversity unfriendly activities [27], and when ecotourism benefits are sufficiently high and wide spread to out-compete basic livelihoods [11].

In addition, negative attitudes can be traced to the historical background of the use of NNP. Before the time Nyungwe forest reserve was elevated to national park status, local communities used it as a source of wild meat, timber, mining, honey and land for cultivation and non-timber forest products such as medical plants and materials for subsequent crafts. The upgrading of the forest reserve into national park increased the restrictions on access to these natural resources leading to substantial loss of income diversification to communities [28]. On the other hand, human capital weaknesses restrain the fraction of the community members who participate in the benefits of ecotourism to only those who are semi-skilled in planning, business management, financial management, marketing, and product research and development, while those who are not skilled in this domain are often placed in a poverty trap [29].

What should be done in so that there are a linkage between ecotourism and effective conservation? Government and non-government organizations should participate for the effective

implementation of ecotourism projects leading to a sustainable development of the local communities around protected areas [30,31]. This is achieved through the development of an integrated biodiversity conservation and development projects (ICDPs) in and around NNP through community based eco-tourism (CBET), an approach used to involve local communities to have ownership in natural resources management [32-35]. This approach is the community based natural resources management (CBNRM) and it is used to effectively involve people in integrated conservation and development projects, which in turn shall bring solutions to the threats facing the biological diversity [11].

## Conclusion

Creating more ecotourism and other economic opportunities together with good management of ecotourism improve livelihoods and food security, reducing reliance on park natural resources and can contribute a lot to stop illegal activities in NNP [26]. This is possible, when ecotourism has the potential of providing economic incentives to preserve natural habitats if and only if the revenues are enough and accessible to the target populations [36], and it can promote the socio-economic development of local people when they are effectively and efficiently used. There is a need to improve the revenue sharing program so that it motivates the local communities to protect NNP. In addition, the improvement in conservation education is needed for improving people's understanding and skills in planning, marketing and biodiversity conservation for sustainable success of ICDPs.

## References

- Walpole MJ, Goodwin HJ (2001) Local attitudes towards conservation and tourism around Komodo National Park, Indonesia. *Environ Conserv* 28: 160-166.
- IUCN/UNEP/WWF (1980) World Conservation Strategy: Living Local attitudes towards conservation and tourism Resource Conservation for Sustainable Development. Gland, Switzerland.
- McNeely JA (1993) Parks for Life: Report of the IV<sup>th</sup> World Congress on National Parks and Protected Areas. Gland, Switzerland.
- Ghimire KB, Pimbert MP (1997) Social Change and Conservation: Environmental Politics and Impacts of National Parks and Protected Areas. London, UK.
- Goodwin H (1996) In pursuit of ecotourism. *Biodivers Conserv* 5: 277-291.
- Diamantis D (1999) The concept of ecotourism: evolution and trends. *Curr Issues Tour* 2: 93-122.

7. Lascurain HC (1996) *Tourism and Protected Areas*. IUCN-World Conservation Union. Gland, Switzerland.
8. Torquebiau E, Taylor R (2009) Natural resource management by rural citizens in developing countries: innovations still required. *Biodivers Conserv* 18: 2537-2550.
9. Brooks J, Franzen M, Holmes C, Grote M, Borgerhoff M (2006) Testing hypotheses for the success of different conservation strategies. *Conserv Biol* 20: 1528-1538.
10. Boo E (1992) *The ecotourism boom: planning for development and management*. WHN Technical Paper Series Paper 2, World Wildlife Fund.
11. Kiss A (2004) Is community-based ecotourism a good use of biodiversity conservation funds? *Trends Ecol Evol* 19: 2004.
12. Salafsky N (2001) A systematic test of an enterprise strategy for community-based biodiversity conservation. *Conserv Biol* 15: 1585-1595.
13. Camp DNG, Adrian M, Shawn GM, Kebede B (2015) *The privatization of the Nyungwe National Park Buffer Zone and Implications for Adjacent Communities*. Soc Nat Resour.
14. Makana JR, Habiambere T, Hall J (2004) *Evaluation de la zone tempon de la reserve forestiere de Nyungwe, sud-ouest du Rwanda*. Bronx, NY: Wildlife Conservation Society.
15. Kanyambwa S (1992) *The biodiversity of Rwanda's mountain forests and the problems of their conservation*. Minagri Conference, National Day of the Tree.
16. Musabe T (2002) *Use of Non Timber Forest Products (NTFPs) and it Ecological Impact on the Conservation of Nyungwe Forest Reserve in Rwanda*. A Thesis Submitted in Partial Fulfilment for the Award of the Degree of Master of Environmental Studies (Science), Kenyatta University.
17. Plumptre AJ, Rainer KA, Munanura HGM, Barakabuye I, Asuma N, et al. (2004) *The Socio-economic Status of People Living near Protected Areas in the Central Albertine Rift*. Albertine Rift Technical Reports.
18. Vedder A, Fashing PJ (2002) Diet of a 300-member Angolan colobus monkey (*Colobus angolensis*) super group in the Nyungwe Forest, Rwanda. *Am J Phys Anthropol* 3: 159-160.
19. Teddlie CB, Tashakkori A (2008) *In foundations of mixed methods research: Integrating quantitative and qualitative approaches in social and behavior sciences*. Sage Publishers. Inc.
20. Durrance CJ, Karen EF (2005) *How Libraries and Librarians Help: A Guide to Identifying User-Centered Outcome*. Chicago: American Library Association.
21. Ndayisaba E (2009) *Socioeconomic study of the bamboo section and its impact on Cercopithecus hamlyni at Nyungwe National Park*. Dissertation submitted for a Bachelor's degree in Biology, National University of Rwanda
22. Coria J, Calfucura E (2012) Ecotourism and the development of indigenous communities: The good, the bad, and the ugly. *Ecol Econ* 73: 47-55.
23. Kamuzinzi PK, Shukla J, Ndabaga E (2015) *The effectiveness of Rwanda development board tourism revenue sharing program towards local community socio-economic development: a case study of Nyungwe National Park*.
24. Lindsey P, Alexander R, Toit JD, Mills M (2005) The potential contribution of ecotourism to African wild dog *Lycaon pictus* conservation in South Africa. *Biol Conserv* 123: 339-348.
25. Mbaiwa J, Stronza A (2010) The effects of tourism development on rural livelihoods in the Okavango Delta, Botswana. *J Sustain Tour* 18: 635-656.
26. Umuziranenge G (2012) *Ecotourism as a potential conservation incentive and its impact on community development around Nyungwe National Park*. MSc thesis, National University of Rwanda, Huye.
27. Wunder S (2000) Ecotourism and economic incentives: an empirical approach. *Ecol Econ* 32: 465-479.
28. Namara A (2005) From paternalism to real partnership with local communities? *Afr Dev* 31: 39-68.
29. Ashley C, Jones B (2001) Joint ventures between communities and tourism investors: experience in southern Africa. *Int J Tour Res* 3: 407-423.
30. Sofield T, Li F (2007) *China: Ecotourism and cultural, harmony and dissonance*. In: Higham J editor. *Critical Issues in Ecotourism: Understanding a Complex Tourism Phenomenon*. Elsevier, Butterworth-Heinemann.
31. Zeppel H (2006) *Indigenous ecotourism: sustainable development and management*. Ecotourism Book Series.
32. Oates JF (1999) *Myth and Reality in the Rain Forest: How Conservation Strategies Are Failing in West Africa*. University of California Press.
33. Kramer R (1997) *Last Stand: Protected Areas and the Defense of Tropical Biodiversity* Oxford University Press.
34. Ferraro PJ, Simpson RD (2002) The cost-effectiveness of conservation payments. *Land Econ* 78: 339-353.
35. Ferraro PJ, Kiss A (2002) Direct payments to conserve biodiversity. *Science* 298: 1718-1719.
36. Colvin J (1994) Capirona: a model of indigenous ecotourism. *J Sustain Tour* 2: 174-177.