MUST Journal of Research and Development (MJRD) Volume 5 Issue 1, April 2024
e ISSN 2683-6467 & p ISSN 2683-6475

The Impact of Human Activities on Wildlife Conservation in the Ngorongoro Conservation Area

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DOI: https://doi.org/10.62277/mjrd2024v5i10042

ARTICLE INFORMATION

Article History

Received: 27th August 2023
Revised: 4th April 2024
Accepted: 5th April 2024
Published: 30th April 2024

Keywords

Impacts
Population
Activities
Wildlife
Conservation
Threat
Management
Habitats

ABSTRACT

Human population growth in areas bordering protected areas is high and has become a serious threat to the management of wildlife all over Africa. Local communities around the protected areas conduct illegal activities that are destructive to habitats and threaten wildlife. This study explored the impact of the human population on large animals in the Ngorongoro Conservation Area. The study used quantitative and qualitative research methods, employing both closed and open-ended questionnaires from 125 respondents. The collected data were analysed using IBM and Microsoft Excel tools. The results showed that wildlife and livestock can share and drink water in the same area. Furthermore, the study established that an increase in livestock numbers has no negative effect on wildlife numbers, but an increase in human settlement (93.9%) consumed natural forest products as building materials, creating deforestation, while the use of firewood as a source of power (96.5%) has a great negative impact on wildlife and their habitat because of fragmentation of wildlife habitat within Ngorongoro Conservation Area. Thus, there is a need to manage population growth along the national conserved or protected areas to ensure the long-term existence of designated protected areas.

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1.0 Introduction

The contemporary processes of land use change and livelihood diversification have been a result of local communities abandoning their traditional lives (Mundia and Murayama, 2009). Thus, in order to improve their quality of life, local communities are able to choose what they will keep and discard of their traditional ways (Riemerand Kelder, 2008). Expecting indigenous people to retain traditional, low-impact patterns of resource use can be like denying them the right to grow and change in ways compatible with the rest of humanity (Riemer and Kelder, 2008). However, if not well organised, land use changes and livelihood diversification will have detrimental effects on the ecosystem that the community and wild animals depend on (Homewood et al., 2001). For instance, traditional perceptions of farmers and pastoralists as the primary causes of environmental degradation have given way to the recognition of political, institutional, and structural factors as equally important factors fueling the problem (Nelson, 2009). The spread of cultivation and establishment of commercial agriculture in formerly subsistence agricultural and pastoralist areas contradict national and international society's interests in biodiversity conservation (Mvungi, 2007). The technologies in use determine the extent to which human activities damage or sustain the environment, as well as the amount of waste associated with any level of consumption (Mlengeya and Lyaruu, 2005). Furthermore, increasing agricultural practices in protected areas or adjacent areas is likely to have reduced the size of the grazing areas for both wild animals and livestock. The implication of this change is that pastoralists can no longer subsist on pastoralism due to scarcity of pasture and competition for grazing land and water, thus resulting in livelihood diversification.

Tanzania boasts the richest wildlife areas in both East Africa and the world (Goldman, 2003). It is one of Africa's countries with a high percentage of land under protection. So far, the country has set aside about 43.7% of its land under some form of protection, which is state control and largely prohibits human settlement (28% are wildlife protected areas, including game-controlled areas, and 15.7% are forest reserves). This is probably one of the highest percentages of land set aside for conservation in the world. After independence, Julius Nyerere, the first president of Tanzania, gazetted almost 80% of Tanzania's protected areas, reflecting the principles of the Arusha Manifesto on the importance of wildlife conservation. The increasing number of protected areas in Tanzania further relates to the importance of tourism, which will contribute about 17.2% of national GDP by 2014 (World Travel and Tourism Council, 2014). To date, the tourism industry has primarily relied on wildlife resources as a major attraction, with up to 90% of all tourists participating in game viewing or hunting safaris (Nelson, 2007). Notably, the increasing protection of Tanzanian natural resources has not been without its challenges.

Ordinance No. 413 of 1959 established the Ngorongoro Conservation Area (NCA), a multiple land use area that permits both wildlife conservation and limited human development (Olenasha et al., 2001). The principal land uses allowed in the area include conservation of natural resources, traditional Maasai livestock grazing, and tourism (Niboye, 2010). The NCA's global recognition as a WHS (World Heritage Site) is widespread. In recent times, scientists and authors have begun to realise that wild animals are equally, if not more, important than domesticated animals. People have always been aware of the consumptive economic importance of hunting or trapping wild animals, but in recent times, other non-consumptive values have become popular. Wildlife has a wide range of ecological, economic, and cultural significance in relation to human existence. Human fascination with the beauty of wild animals drives tourism worldwide. This has the effect of boosting the economy and creating jobs where there otherwise may be none. Managed in the right way, tourism raises awareness of the need to conserve delicate ecosystems containing endangered animals. It gives people a driving force to want to help in conservation efforts, which will unquestionably lead to a better future for planet Earth. Historically, wildlife has played a huge part in the day-to-day lives of many cultures. Wild animals continue to play an important role in religious ceremonies, community events, and community bonding in many third-world countries. For example, common animals such as kangaroos still play a huge

role in the tribal rituals and beliefs of many indigenous communities in Northern Australia. In recent decades, the world has seen a significant population expansion. Over the past 60 years, the U.S. population has doubled from 130 million to more than 260 million (NGS, 1995), and projections indicate that it will double again to 520 million in the next 60 years, based on the current growth rate of 1.1% per year (USBC, 1994). This will lead to the growth of towns, cities, and new settlements, which will exert pressure on protected areas. It is understood that land is scarce, but the population of both wildlife and humans continues to fluctuate positively over time. In contrast, China currently has a population of 1.2 billion, and despite the governmental policy of permitting only one child per couple, it too is growing at a rate of 11% (PRB, 1995). China's desirable population is 650 million, or about one-half of the current population level (Qu and Li, 1992). The population of India is nearly 1 billion, living on about one-third the land of the United States or China. This population expanded to protected areas as the result of negative impacts on wild animals, both large and small; however, its rate of increase is 1.9 percent, which is equivalent to a doubling time of 37 years (PRB, 1995). Together, China and India have more than one-third of the total world population. Although projections suggest that these populations will double in 60 and 37 years, respectively, it is unlikely that either population will double due to their declining resources limiting such growth. Because most nations will have similar constraints on land, water, energy, and biological resources relative to population density, it is unlikely that the world population will double in the next 50–100 years, despite the current projection (PRB, 1995). All of these have an impact on wild animals because new populations require land for settlement, agriculture, and other social and economic activities.

Population growth in our country, Tanzania, from 1967 to 2012: in 1967, there were 12.3 million people, and 2012 statistics show an increase to 44.9 million. Tanzania's rapid population growth has led to the expansion of areas designated for wild animals by the Tanzanian government, such as national parks, protected areas, game reserves, and natural vegetation. The frequent conflicts between the local people living adjacent to areas such as NCA, Manyara National Park, Serengeti National Park, Mikumi National Park, and others serve as evidence. Since the establishment of the conservation area in 1959, the resident population in NCA has continued to grow. In 1979, the World Heritage List estimated that the property's resident population was less than 20,000. A 2007 census estimated the resident population at 64,000, marking a 4,000 increase from the 2002 census. Maasai pastoralists make up the majority of the resident population. Historically, cattle have been the foundation of their economy, livelihoods, and food security, and there is clearly a possible competition for grazing lands between wildlife and cattle.

2.0 Materials and Methods

2.1. Study Area Description

This study was done in NCA using four wards: Nainokanoka ward, Olbalbal ward, Endulen ward (which has a lot of different tribes), and Ngorongoro ward (Figure 1). These wards were chosen to get a well-designed stratified sampling, and they had a lot of different kinds of maasai communities, including educated maasai and mang'ati, elders, youth, and even workers who lived in the area full-time (Table 1). Purposive sampling, particularly homogeneous sampling, was used to pick up a small sample with similar characteristics to describe some subgroups in depth. In this sample method, the researcher purposely targeted a group of people believed to be reliable for the study. Therefore, the researcher used this method to select respondents for the study, specifically from Ngorongoro ward (the most populated ward in Ngorongoro district), Noinokanoka ward, Olbalbal ward, and Enduleni ward, which represent various tribes. To ensure accurate study representation, the sample included Maasai and Mang'ati male and female respondents of different ages and education levels.

2.2. Data Collection Methods

The researcher collected primary data for this study through questionnaires, direct observation, and focus group discussions. The researcher required these data to produce new and unique insights. The researcher collected these data through a questionnaire, observation, and focus group discussions. In this study,

the researcher constructed questionnaire questions for selected respondents as the primary source of data.

2.2.1. Questionnaire

Researchers commonly use questionnaires to gather crucial information about the population (Mugenda and Mugenda, 1999 and 2003). The researcher disseminated the questionnaires to the intended respondents, anticipating their independent reading, comprehension, and response. To increase the validity of responses, the questionnaires contained both open-ended and closed-ended questions, as well as matrix questions.

The questionnaire consisted of two main parts, with the first collecting households' general information and the second assessing respondents' responses to the impacts of human population growth on wild animals at NCA.

2.2.2. Direct Observation

This study used direct observation to gather information about human activities. It involved observing activities such as firewood collection, tree cutting, grazing animals, and trade within the NCA. In this study, the direct observation method was essentially used to connect the disparate data elements gathered through other methods.

2.2.3. Focus Group Discussions

The researcher organised a focus group discussion for 6 to 8 people. Focus group discussions afforded participants a forum to deliberate on a specific topic, fostering an environment that permitted mutual agreement or disagreement. Focus group discussions explored a range of opinions and ideas, as well as the inconsistencies and variations that exist in a particular community in terms of beliefs and their experiences and practices concerning the impacts of human populations on wildlife.

Figure 1

The Map Showing NCA Areas where Sample Taken

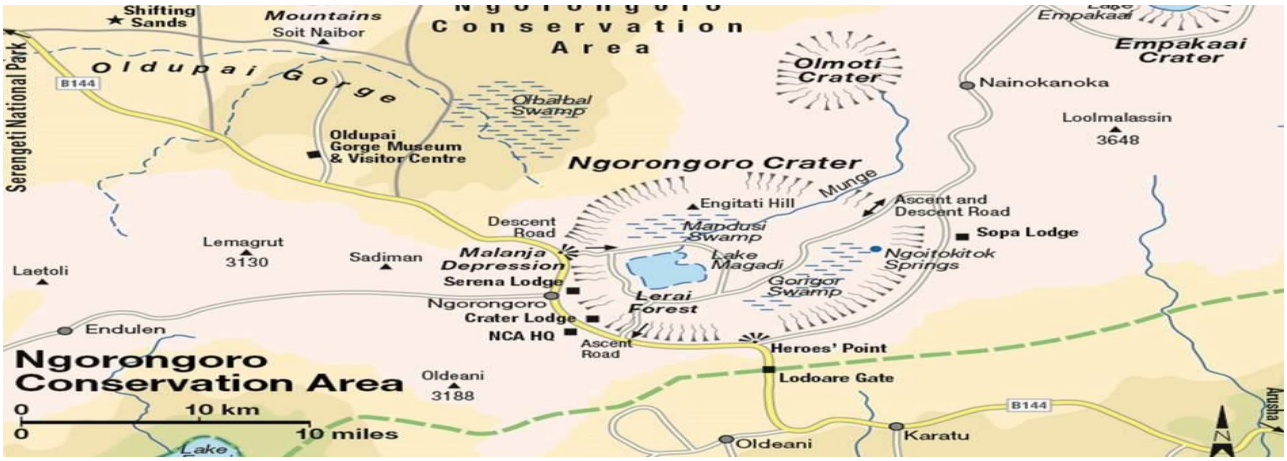


Table 1

Sample Size from Four Wards Involved in the Present Study

Ward	Males	Females	Age	Education	Occupation
	05	05	30 – 45	Primary level	pastoralists
	06	06	46 – 70	Primary level	pastoralists
	02	02	30 – 45	Secondary level	pastoralists
	02	02	46 – 70	College level	pastoralists

Nainokanoka	01	01	Above 30	Any	Ward leaders
	05	05	30 – 45	Primary level	pastoralists
	06	06	46 - 70	Primary level	pastoralists
	02	02	30 - 45	Secondary level	pastoralists
	02	02	46 - 70	College level	pastoralists
Olbalbal	01	01	Above 30	Any	Ward leaders
	05	05	30 - 45	Primary level	pastoralists
	06	06	46 - 70	Primary level	pastoralists
	02	02	30 - 45	Secondary level	pastoralists
	02	02	46 - 70	College level	pastoralists
Endulen	01	01	Above 30	Any	Ward leaders
Ngorongoro	03	03	Above 25	Degree level	Ecology
	02	03	Above 25	Any	Protection
[NCA HQ]	03	02	Above 25	Degree level	Tourism
[Local people]	4	3	30 - 45	Primary level	pastoralists
	3	3	Above 45	Secondary level	pastoralists

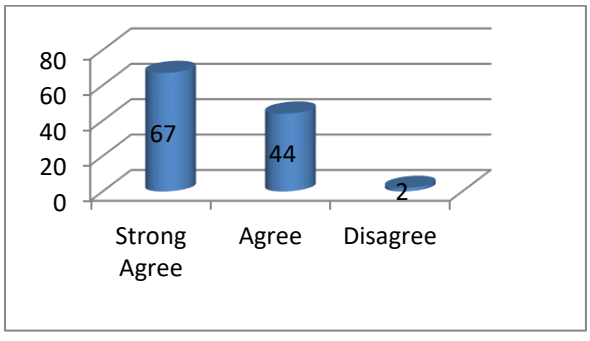
3.0 **Results**

2.3. Demographic Characteristics of the Respondents

The respondents' demographic characteristics included sex, age, education level, and occupation. Most of the people interviewed were pastoralists, especially Maasai and Barabaig, with permanent settlements (both males and females) at NCA (Table 2). More than 97.4% of the respondents had permanent settlement at NCA, and 1.8% of the respondents had no permanent settlement at NCA. But apart from having permanent settlement within the area, they own nothing, especially land and other natural resources; they own only their livestock and semi-permanent buildings, and this is a critical problem since they are using the available resources without considering future generations. They frequently overuse the available natural resources, leading to significant issues.

Figure 1

Respondents with Permanent Settlement



Source: Field Data (2018)

The Maasai are one of the most impoverished tribes in East Africa. They have proudly maintained their traditional lifestyle and cultural identity despite the pressures of the modern world. They live a nomadic lifestyle, raising cattle and goats, wearing traditional clothes, and living in small villages, which are circular arrangements of mud huts. In the process of preserving their culture, however, the Maasai have embraced a system that denies women basic human rights: the right to an education, the right to control their bodies, the right to choose whom and when to marry, and the right to express an opinion. In this study, only 37.7% of Maasai women had the opportunity to respond to a questionnaire, whereas males contributed more, approximately 61.4%, as shown in Table 2. Noe (2003), who also reported on the male dominance in Maasai traditions, supports this argument.

Table 2
The Gender Distribution of Respondents Involved in the Present Study

Gender	Respondents	Per cent
Males	70	61.4
Females	43	37.7
Total	113	99.1

Most of the respondents interviewed were between the ages of 31 and 50, and very few were 65 and older. This is because most of the old Maasai provided the historical background of NCA, which is not part of this research, but the middle population knows the current events of the studied area (Table 3). Involvement of different age groups in the study was very important because different age groups had different experiences with the past situation of NCA, particularly the impacts of human population growth on wildlife. This demographic also serves as a labour force, physically interacting with natural resources to advance their lives. They frequently ask questions about what to produce, how to produce it, when to produce it, who to produce it for, and where to produce it. Ultimately, the NCAA must guide them in adhering to Wild Life policies to meet the interests of local communities and NCAA Wildlife policies.

Table 3
Respondents Age Groups and their Distribution

Age group (in years)	Respondents	Per cent (%)
Below 20	4	3.5
20 to 30	24	21.1
31 to 40	38	33.3
41 to 50	36	31.6
Above 50	11	9.6
Total	113	99.1

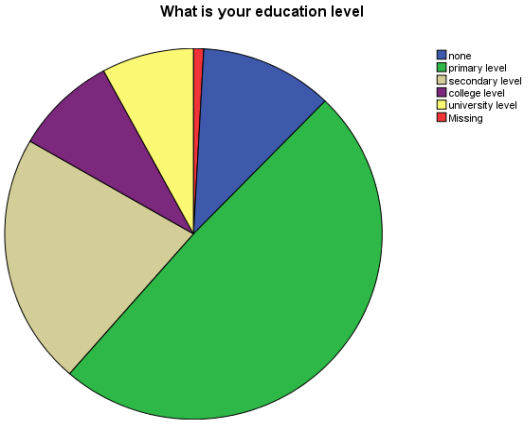
Source: Field data (2018)

2.4. Respondent Education Level

The study found that most of the respondents had attended primary education, a few attended secondary school, and very few attended colleges and universities (Figure 2). The low level of formal education was due to the traditions of pastoralist societies like Maasai and Mang'ati, which do not encourage their children to attend school; instead, many of them remain at home, taking care of the livestock. Only those who were considered troublemakers and didn't properly care for livestock were allowed to go to school. Therefore, the illiterate members of the community, who were not considered troublemakers, spent the majority of their lives caring for their livestock. And apart from those few who attended school, most of them are boys, and most of the girls remain at home to help their mothers find water, firewood, milking cows, and other domestic activities. Most of them marry shortly after FGM. Most of pastoralists believe that formal education have negative impacts to their societies since most of educated maasai they never come back after having high education and even they come back they never follow the tradition of their community and also they don’t use fresh blood, they came back with new believes which are not fit to those societies, but few maasai now enjoying good fruits of education most of them are employed at NCAA and they have good life so young generation now wish to have education but a challenge is schools both primary and secondary schools, there is only two secondary schools.

Figure 2

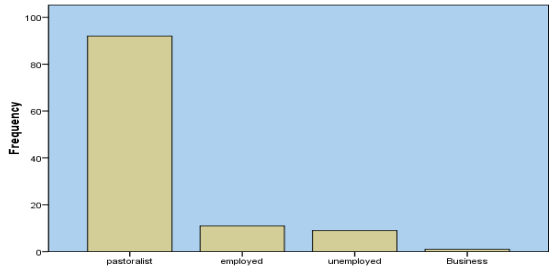
Education Level Distribution among Respondents Participated in the Current Study



In Tanzania, Maasai are traditionally pastoralists (Rodriguez *et al*., 2012). However, this is not the current case in NCA, as they are also in small businesses like cultural bomas. This study revealed that livestock keeping is the primary socio-economic activity of the respondents, with only a small number engaging in office work (Figure 3). Most of the interviewees rely heavily on livestock as their primary source of income. This is partly a strategy to meet food demand and other expenses after realising the cost associated with keeping large herds of cattle and a lack of grazing pasture.

Figure 3

Human Activities within NCA



2.5. Number of Households with Permanent Settlements in the NCA

It is indeed true that the number of households with permanent settlements in NCA is increasing for the following reasons: Most of the local people interviewed (84.2%) said that they don't use family planning methods, as shown in Table 4. This resulted in a high growth rate of population within the area with negative impacts on the available natural resources like forest, grazing land, and wild animal habitat. Here, both human population growth rates are high, and wild animal populations are also increasing while NCA remains fixed. This created pressure on the use of natural resources, especially forest (for firewood and building materials) and grazing land because livestock are also increasing as the human population increases.

Table 4

The Introduction of New Settlement within NCA

	Respondents	Percent (%)
Strong Agree	47	41.2
Agree	62	54.4
Undecided	1	0.9
Strong Disagree	3	2.6
Total	**113**	**99.1**

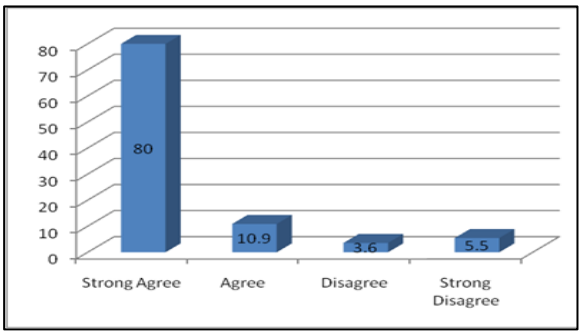
Table 5

The Participants' Response on Grazing Land Decrease as the Number of People Increase

	Respondents	**Percent**
Strong Agree	68	59.6
Agree	44	38.6
Strong Disagree	1	0.9
Total	**113**	**99.1**

Figure 4

The Response of Participants on how Building Materials at NCA Forest Products are



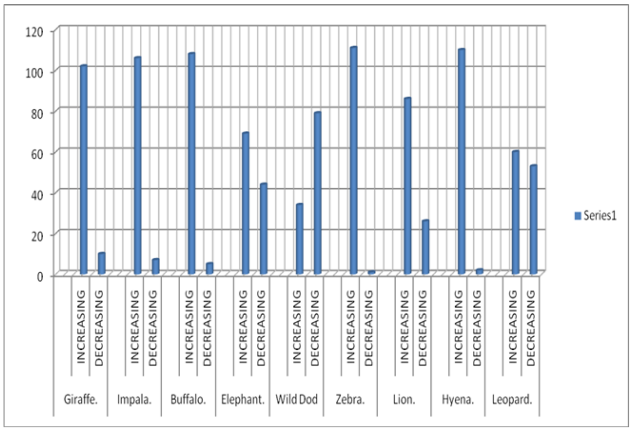
Source: Field Data (2018)

Table 6
Respondents Acknowledged Obtaining Natural Products Such as Fuel Wood

	Frequency	per cent
Strong Agree	79	69.3
Agree	31	27.2
Disagree	2	1.8
Strong disagree	1	0.9

Source: Field Data 2018

Figure 5
The General Trend of Various Wild Animals within NCA



Source: Field Data (2018)

Table 7
Respondents' Attitudes on Impacts of Wildlife Habitat and what Extent have Wildlife Habitat Affected by Land Uses

Respondent's attitudes on impacts of Wildlife habitat		
	Respondents	Percent
Strong Agree	45	39.5
Agree	63	55.3
Disagree	1	0.9
Strong disagree	4	3.5
To what extent have wildlife habitat affected by land uses		
	Respondents	Percent (%)
At large	2	1.8
Small extent	80	70.2
No negative impacts at all	24	21.1

4.0 Discussion of Major Findings

3.1. There is Rapid Population Growth

Population and the environment: a report from the National Wildlife Federation finds that the that the unprecedented rate at which the human population has grown since the beginning of the industrial revolution has had immeasurable impacts on the ability of non-human species to survive. More people using more resources results in less and less suitable habitat for wildlife, pushing many species to the brink of extinction. While species extinction has been a normal phenomenon throughout history, today we are experiencing a mass extinction comparable to that of the dinosaurs, where nearly 20 plant and animal species become extinct every hour. Due to a number of factors, like improvement of medical facilities, mortality in general, especially infant mortality rate decreases, early marriages, naming of relatives, a large number of families as a source of cheap labour, a low level of education on the application of modern family planning, and more cultural factors, all of these contributed to the high population growth rate at NCA. The rapid human demographic growth increases demand and competition for resources, which has resulted in an increased exploitation of resources at the highest level beyond the capacity of the available resources. The demands were associated with wildlife and habitat destruction, including land for settlements and livestock grazing; plants for fuel wood, building

poles, and timber; and water points for livestock and domestic use. Essentially, demographic growth is the prime cause of wildlife poaching and habitat loss.

3.2. Introduction of New Settlement has Negative Impacts on Wildlife

The introduction of new settlements has more negative impacts because new areas are needed for boma construction, and these boma forest products were used for construction as a result of deforestation. The introduction of these settlements and the cutting of trees for construction materials are creating fragmentation on wildlife habitat and sometimes blocking wildlife corridors, so this is a serious problem at NCA. The NCAA has a great task to provide to local people a master plan for future settlement construction since now every individual at NCA can establish his or her settlement anywhere except protected areas like crater highland, crater rim, and within the crater, but other places they are free to introduce a so-called bomas. According to the U.S. Fish & Wildlife Service, destruction, degradation, and fragmentation of habitat are the driving forces behind today's decline in species and biodiversity. Impacts on habitat can be caused directly by such activities as the clearing of forests to grow crops or build homes, or indirectly, for example, by the introduction of invasive species or increased pollution run-off from yards and fields.

3.3. Poverty

Globally, Tanzania is often described as a rich and stable state, though it is among the very poor countries. The country is blessed with abundant natural resources, which include forests and woodlands, wild animals, rivers, lakes, and wetlands (MNRT 2012). Tanzania is also endowed with a variety of huge reserves of minerals, which include gold, nickel, Tanzanite, diamond, copper, iron ore, coal, limestone, soda ash, gypsum, and phosphate (URT 1997b). Despite the enormous resources, wealth, and political stability, the country's economic performance has not been impressive. Poverty is a contributing factor to environmental problems at NCA. Poor people use their natural environment to make their lives possible. Most pastoralists depend on their livestock, and livestock depend on climate, so due to climate change every year, most livestock die due to drought. Poverty is the major contributing factor to deforestation and overgrazing as the result of the destruction of wildlife habitat, as seen at NCA. Apart from the NCAA, try to provide most of the free services, like treatment for both humans and livestock and the introduction of various projects to alleviate poverty for the majority still there.

Poverty at the national level has an impact on the funding of the biodiversity sector. The notable impact was observed between the 1970s and 1980s, when the global economic recession and, consequently, underfunding of the sector caused rampant poaching of rhinos and elephants. Poverty at the household level reduces people's ability to improve on their existing livelihood strategies, thus forcing them to opt for coping strategies that are unsustainable and ecologically destructive. For example, because of poverty, peasants can barely afford to purchase and use agricultural inputs to increase crop production on their lands. Food insecurity and income poverty resulting from this scenario may lead to the conversion of more wildlife habitats into croplands as well as the killing of wild animals for protein (Hackel 1999; Loibooki et al. 2002; Kideghesho et al. 2005; Wittemyer et al. 2008). Household poverty also limits access to and usage of electricity as a source of energy. Wood fuel (firewood and charcoal) has remained the most dominant and reliable source of energy for cooking and heating, both in urban and rural areas, accounting for over 90% of the daily total energy consumption that is required by more than 85% of the country’s population (URT, 2003). The ever-increasing fuel energy demands put more woodland areas under pressure, thereby driving significant land cover change in most unprotected rangelands.

3.4. Grazing Land Decreasing Due to Increase of Number of Livestock some Conditions from NCAA

The majority of the interviewees acknowledged the decreasing pastures and other natural resource availability in the NCA. This decrease has caused an increase in time spent to obtain fuel, wild vegetables, and those Ching materials, while women have suffered significantly as a result of such changes. Despite the implementation of different programmes by the NCAA to bring about household income relief, many local

stakeholders are still complaining about the lack of benefits accrued from the conservation of this area. Changes are still possible, but they will necessitate the implementation of audacious policy choices and the establishment of consensus among the local populace whose livelihoods are reliant on the NCA's resources. On top of that, grazing land decreases also because, according to interviewed respondents, the boundaries of protected areas are keeping on expanding and this is creating a small area with a large number of livestock. The confinement of livestock into small areas causes overgrazing, soil erosion, and the siltation of water bodies (Kideghesho, 2005). Perhaps the most critical land loss was experienced by the pastoralists living on the floor of the Ngorongoro Crater. As a consequence of the villagization programme of the mid-1970s and the hardening conservation rule, they were evicted from the Ngorongoro Crater in the late 1970s. Grazing and watering of livestock in the crater, covering an area of some 250 square km, were prohibited. Since the Maasai occupation of the Serengeti-Ngorongoro area, the Crater has been the home and dry season base of a small community of Maasai pastoralists, as well as an essential dry season grazing ground and salt lick for the pastoralists living in the surrounding highlands. This community, comprising at the time of eviction some three to four settlements, was now moved to a newly founded village on the western rim of the crater.

3.5. Policies to the Local People about their Tomorrow within NCA

This study found that there are no clear policies for local people in NCA about their future existence in the area. This is because most of the interviewed respondents know nothing about their future; emigration is inevitable for them to allow open land for wildlife habitats. Conservation projects lead to displacement because conservation, like development, is inherently spatial. Conservation of species and ecosystems requires restrictions on human influences at the at the local, state, and corporate levels in areas where species or ecosystems are to be conserved. The most popular strategy is protecting areas. However, the global picture about the size and complexity of protected area classification and the impacts of different types of protected areas on human activities is at best unclear. The major problem in the eyes of the pastoralists was the loss of autonomy brought about by the conservation rules and restrictions. The restrictions set artificial limits to resource utilization, limits which the pastoralists see as unwarranted. At present, when the livestock density in the highlands is high and pressures on resources are relatively heavy, the fact that the pastoralists are deprived of valuable traditional grazing land is felt particularly strongly and experienced as having detrimental effects on human and livestock health. There is less grass for the animals and less milk for the people.

The consequences of displacement on human welfare are difficult to state with precision, even though they can be inferred. On the other hand, it is difficult to know exactly how much the setting aside of protected areas has contributed to biodiversity conservation. Various studies of protected areas provide general indications of their effectiveness. But this general conclusion hides a wealth of details and variations that prevent precise statements about the marginal gains from strict conservation, the gains from partial protection, and how such gains can be balanced against the losses to those displaced from protected areas (Hayes 2006). For example, some quantitative studies covering a significant number of protected areas focus more on the conservation of forests than wildlife (Naughton-Treves et al., 2005). Many other studies focus more on the extent to which existing protected areas represent biological diversity than the actual effectiveness of protection. Analogously, there are few established metrics based on which the management effectiveness of protected areas can be compared (Chape et al., 2005). Many studies point to the numerous threats to protected area effectiveness (Bruner et al., 2004; Struhsaker et al., 2005), including the fact that many established protected areas are expected to contribute to poverty alleviation (Naughton-Treves et al., 2005). Furthermore, other scholars argue that conservation projects that lead to displacement are likely to create anger and bitterness that lead to conservation failures. Displaced people have strong incentives to destroy wildlife and resources within protected areas. Given the limited capacity of most governments in developing countries to enforce existing regulations, especially in the peripheral

locations where many important protected areas are located, conservation success is likely dependent on local acceptance or resistance. Ultimately, it is an empirical question, but it is quite likely that a combination of strong local resentments caused by displacement or restrictions, feeble enforcement capacity, and organised poaching pose major obstacles to conservation.

Consider Joy Ngoboka's testimony: "On the first day the police ran into my compound, they chased us out." They all had guns. They shouted at me and told me to run. I had no chance to say anything. I was frightened for the children, but we just ran off in all directions. I took my way, and the children took theirs. Other people were running, panicking, and even picking up the wrong children in the confusion. I lost everything. I had 31 cows and some goats and hens. They were killed; 20 cows were killed, and the rest were taken. They burned everything, even the bed, furniture, and kitchen. We're poor now" (Ozinga, 2003). If one did not know that this woman was displaced by the Kabile Game Corridor, one might believe this was a testimony from a refugee displaced by war. Let local people at NCA to displaced but in a peaceful way this is no applied now but my worry will be tomorrow morning or the coming near future and that most of interviewed respondents they don't know what will happen to them tomorrow and this question frequently asked to me 'Lini Serikali watakujakutuhamishahuku?' and this question show me that the available natural resources as far as Wildlife habitats concern were destroyed and fragmented at the maximum within NCA since most of local people they don't know their tomorrow morning or the coming near future force are not applied now within NCA but hash conditions created to local people to make their live impossible within that particular place.

A review of existing writings and available evidence suggests that there is no easy way for conservation professionals and organisations to defend conservation when it leads to the forcible displacement of humans from areas that are to be protected, even if it is to stave off the extinction of several species. Although there is clear evidence that the establishment of protected areas has been critical to the conservation of rare species and endangered habitats, there are very few studies that establish a relationship between the displacement of humans from the protected areas and the marginal gain such displacement confers on biodiversity conservation. Arguments in favour of displacement are built upon the assumption that human presence invariably impacts wildlife and biodiversity negatively. But studies have seldom focused on the extent to which this assumption is systematically correct. Therefore, generalisations asserting an inescapable conflict between biodiversity conservation and human presence in protected areas are no more accurate than those that suggest that a harmonious and sustainable relationship can and will prevail (Kent Redford, 2007).

3.6. Overgrazing Areas New Invasive Plant Take a Chance to Growth

Next to habitat destruction and fragmentation, invasive alien species are among the world's most significant threats to indigenous biodiversity; their introduction and establishment will ultimately lead to severe levelling off of biodiversity. Many rangelands in Tanzania, including national parks and other forms of protected areas, have also not been immune to infestation by invasive species (Foxcroft et al. 2006). As a consequence, the invasive species have now been recognised on conservation agendas countrywide. The most important areas that are highly infested by these species include the Ngorongoro Conservation Area Authority, Serengeti National Park, and several other non-protected areas. The available literature shows that invasive alien species continue to engulf the grazing lawns of the Ngorongoro crater (Henderson 2002). These include Daturastramonium, Acacia mearsii, Caesalpiniade capetala, Eucalyptus camaldulensis, Lonicera japonica, and Argemonemexicana.

Theories of invasion predict increasing invasiveness with increasing habitat disturbances (Vermeij 1996; Williamson 1999; Davis et al. 2000), as well as global climatic change (Dukes and Mooney 1999; Kolar and Lodge 2001). There have been increasing habitat disturbances in most protected areas cores and edges due to livestock grazing. For example, a recently annexed Ihefu to Ruaha National Park is potentially a victim of invasive species that in future may invade

other parts of the park. In Mkomazi National Park in northern Tanzania, past livestock grazing at the area may have facilitated occurrence of undesirable plant species into the park (Homewood and Brockington 1999). Parthenium hysterophorus is one of the most serious invasive alien species that is already a threat to Ethiopian rangelands and is spreading southward into East African countries (McNeely et al. 2001).

The NCAA is continuing the existing control programmes for invasive species through controlled burning and other measures. Azolla filiculoides (water fern) remains the main threat, as it has infested the freshwater bodies in the crater. For the moment, manual removal remains the only strategy to address this.

3.7. After People Stopped to Cultivate Crops No Extra (Alternative) Income Generations Introduced by NCAA

Ngorongoro Conservation Area is a multiple land-use system established in 1959 to provide for both wildlife conservation and economic development of resident Maasai pastoralists, including cultivation. In recent years, they have stopped cultivating, and no alternative activity has been introduced, so pastoralists use a lot of money to buy food and sometimes rent land for cultivation at Karatu and Mbulu. As cultivation is prohibited in Ngorongoro, the pastoralists sell livestock to obtain grain. The subsistence-oriented pastoral economy is turning into an increasingly exchange-oriented, partly commercialised livestock economy. Grain is purchased in local village shops; only when it is not available in the local shops do the pastoralists go outside the conservation area to look for grain from Malambo, Loliondo, and Karatu. Consequently, there is among the Ngorongoro Maasai a very real need for cash—cash for purchasing not only grain but also cloth, school uniforms, sugar, tea, and durable consumer goods like pots, containers, and the like. The major trading centres in the Ngorongoro Conservation Area are Endulen, Nainokanoka, and Olairobi.

3.8. Climate Change also Created more Negative Impacts both Wildlife Habitat and Local People in General

The rise in temperature and change in rainfall patterns in NCA provide further illustration of the impacts of climate change on biodiversity and force the pastoralists to use protected areas, especially the high land of NCA, to graze their livestock, which caused pressure and overgrazing as the results of destruction of wildlife habitats within the area. Possible changes in the distribution of rainfall throughout the year, associated with global warming (Groisman et al., 1999; Mason et al., 1999), may have major impacts on plants and herbivores in the NCA (Ellis & Galvin, 1994). A slight shift (1%) in rainfall from the wettest months to the driest months caused large increases in forage availability (e.g., Hall et al., 1995) and herbivore populations.

Climate change is increasingly being recognised as a global crisis threatening human survival and biological resources. There is growing evidence that climate change, particularly increasing temperatures, is already having significant impacts on the world's physical, biological, and human systems, and it is expected that these impacts will become more severe in the future (Gitay et al., 2002; Balmford et al., 2003; de Wit and Stankiewicz, 2006; Wilson and Maclean, 2011). Studies suggest that many plants and animals are unlikely to survive within uncertain climate change limits (Thomas et al., 2004; Maclean and Wilson, 2011). By 2050, climate change will lead to the extinction of 15–37% of a total sample of 1,103 land plants and animals (Thomas et al. 2004). In Tanzania, the impacts of climate change have been felt in virtually all ecosystems, including the rangelands. For instance, the severe droughts in the 1990s and 2000s forced the pastoralists to shift their herds towards southern Tanzania in search of pastures. This had led to the destruction of habitats, reduced biodiversity, and the destruction of water sources, as observed in the Ihefu and Great Ruaha Rivers (Kashaigili et al. 2009).

5.0 Conclusion and Recommendations

A healthy population of wildlife is a function of high-quality habitats. Therefore, habitat destruction presents a potential threat to the survival of wildlife species. In NCA, this threat is generated by numerous factors, a situation calling for a variety of mitigation measures or strategies. This diversity of factors and mitigation measures makes the problem of habitat

destruction a multispectral rather than a single-sector issue. Addressing the problem, therefore, calls for the involvement of not only conservationists but also other stakeholders with different interests in the area and professional backgrounds, such as lawyers, agriculturists (pastoralists), the business community, demographers, policymakers, community development workers, and land use planners. For a comprehensive and long-term solution (and not a short-term political solution). The Maasai do not, by nature, seek to harm wildlife, as they understand the importance of wildlife to the NCAA and Tanzania in general. Neither humans nor their cultures are static. This is also true for the Maasai community in the NCA. The increasing drought and human exposure have somewhat increased the possibilities for Maasai communities in Tanzania to access and practice other life forms than pastoralism. Given the ongoing changes so far observed, A majority of the interviewed respondents acknowledged the decreasing availability of pastures and other natural resources in the NCA. This decrease has caused an increase in time spent to obtain fuel, wild vegetables, and other materials, while women have suffered significantly as a result of such changes. Despite the implementation of different programmes by the NCAA to bring about household income relief, many local stakeholders are still complaining about the lack of benefits accrued from the conservation of this area. We think that there is still room for changes, but this will require bold policy decisions and consensus-building with the local people who depend on the available resources in the NCA for their livelihoods. Debates on whether the NCA model, which is multiple land use, is relevant, needs to be changed, or needs to be improved must be taken up further by involving all stakeholders (such as researchers, policymakers, and conservation organisations), whilst considering the local, national, and international ecological, social, and economic significance of the NCA. Lastly, immigration into the NCA must be adequately controlled to ensure that wildlife populations and Maasai people have access to sufficient amounts of resources. This is especially true of developments to improve pasture and provide better access to water. Many of these developments will be built, maintained, and carried out by the resident Maasai, giving them primary rights to those resources. Overuse by passersby will only add to the deterioration of the water pumps or pasture without providing the work to help maintain these sources of life. Similarly, more people will lead to greater congestion in the pastoral zone and will eventually interfere with wildlife populations and their migration routes.

6.0 Acknowledgements

The author acknowledges the following people for their contributions, efforts, guidance, inspiration, direction, and encouragement during my study: Prof. Jumanne Kalwani for his persistent comments, guidance, wisdom, and support; Dr. Reguli Mushi and Dr. Haule of the Open University of Tanzania (OUT) for teaching me the basics of research during my master's degree course work. My sincere thanks are also extended to the Director General TAWIRI for providing permission and free entry into NCA for a period of one year to conduct this academic research. Thanks also go to the Ngorongoro Conservation Area Authority (NCAA) administration for allowing me to carry out this study at their institution. Special thanks go to the Open University of Tanzania (OUT) for admitting me to the university where I accomplished my dream of studying for a for a master's degree. My colleagues in the class at the OUT for the academic year 2016–2017 provided me with support and cooperation during the study; their support and expertise were valuable. I am also grateful to my best friends, Mr. Abdul Ayubu, Mr. Patrick N. Olemong'i, and Mr. Dickson Kiromo, who assisted me in the completion of this project, and to all whose names or designations are not mentioned. I appreciate your contributions to this study.

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