EFFECTS OF BOUNDARY DISPUTES ON BIODIVERSITY CONSERVATION IN PROTECTED AREAS: A CASE STUDY OF TARANGIRE NATIONAL PARK, TANZANIA

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2019

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania, a dissertation titled; **"**Effects of boundary disputes on biodiversity conservation in Protected Areas: A case study of Tarangire National Parkò in partial fulfillment of the requirements for the Degree of Master of Arts in Natural Resource Assessment and Management of the Open University of Tanzania.

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(Supervisor)

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Date

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DECLARATION

I, Vitalis Peter Mtui, do hereby declare that this dissertation is my own original work, and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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Signature

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Date

DEDICATION

I dedicated this work to my beloved parents and family particularly to my wife Anna Mtui and to my children Winnie Yusta and Amanda Esupat and grandchild, Isabel for moral support, inspiration and devotion made my life worth living throughout the period of my study.

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ABSTRACT

The study assessed effects of boundary disputes on biodiversity conservation in Tarangire National Park. The study was conducted in five parks adjacent villages of Gijedabung, Vilima-Vitatu, Olasit, Kakoi and Sangaiwe in Babati District. Questionnaires used to collect data from the respondents. A total of 200 respondents in the study villages were administered with questionnaires. Quantitative data collected from questionnaire and analysed using SPSS and Ms-Excel. The results shows; 77% of respondents admitted the existence of boundary disputes in relation to parks and adjacent villages. 18% of respondents mentioned misuse of power and use of force, 18% mentioned corruption and 14% mentioned expansion of park boundary by force as the main causes of boundary disputes. Loss of livestock was mentioned by 23% of respondents as the effect of boundary disputes while 22% of respondents mentioned crop destruction as the effect of boundary disputes. 11%, 14% and 20% of respondents respectfully mentioned loss of wildlife habitat, poor security and death of people as the effects of boundary disputes. 21.5% of respondents mentioned information sharing between government and villages as the strategy to manage boundary disputes. 16.3% of respondents mentioned to combat corruption, 15.7 % mentioned to provide conservation education and 14.1 % of respondents mentioned to mark boundary as the strategy to resolve boundary disputes. The study recommends involvement of local community during redefining and demarcating park boundaries, information sharing between government and villagers in boundary related deliberations, conservation education and awareness raising to local communities on importance of conservation and benefit sharing between the park and local communities as strategies to manage boundary disputes.

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LIST OF ABBREVIATIONS

CCS	Community Conservation Services
CE	Conservation Education
CBD	Convention on Biological Diversity
GN	Government Notice
GPS	Global Position System
KWS	Kenya Wildlife Service
IGP	Income Generating Project
IUCN	International Union for Conservation of Nature
NCAA	Ngorongoro Conservation Area Authority
PA	Protected Areas
SANAPA	Serengeti National Park
SCIP	Support for Community Initiated Project
SPSS	Statistical Package for Social Science
TANAPA	Tanzania National Parks
TANROADS	Tanzania Roads Agency
TAWA	Tanzania Wildlife Authority
TFS	Tanzania Forest Services
TNP	Tarangire National Park
TIGPs	Tanapa Income Generating Projects
UN	United Nations
URT	United Republic of Tanzania

USAID	US Agency for International development
VLC	Village Land Council
WWF	World Wide Fund

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter presents the background to the research problem, statement of the research problem and objectives of the study. It further presents research questions, significance of the study and organizations of the study.

1.2 Background to the Research Problem

Protected areas (PAs) represent an important tool for the conservation of biodiversity. However; PAs covers only about 11.5% of the planetôs land surface (Rodrigues, 2004). The conservation of biodiversity has conventionally been the central aim in the management of wildlife resources, by setting aside areas for protection and restricting human encroachment. The categories of PAs are arranged by International Union for Conservation of Nature (IUCN) whereby each suits to a particular conservation needs and is capable of contributing to regional, national or international goals of biodiversity conservation (IUCN, 1994).

Throughout history, people and wildlife have coexisted together with both positive and negative interactions. However, in recent years the increases in human activities and land use changes have hugely impacted ecosystem functions and services (Sala *et al.* 2000). The competition over natural resources use between human use and conservation is manifested by increased disputes particularly on land (Hopcraft, 2010). In the African Savanna ecosystem, as the human population continues to grow, livelihood dependence on natural resources also increases and hence becomes a conservation challenge (Kidegesho *et al.* 2005; Hopcraft, 2010; Masuki, 2017).

Presence of rich natural resources while legally restricts human use in protected areas, aggravates the competition and consequently boundary disputes. Restriction in access and use of protected area resources to local communities is not well perceived and understood as an effective management regime rather a denial of their right, hence becoming a source of disputes. Mean while the government of Tanzania perceives conservation as an important land use with about 30% of her land designated as protected areas, communities on the other hand view it differently and consider that a large considerable size of land has unnecessarily been protected for conservation purposes. This perception by communities has its consequences on provision of ecosystem services.

Ecosystem services and socio-economic development support provided by the PAs to local communitiesô livelihoods is increasingly jeopardised as a result of continued conflicts over boundary locations and natural resource use (Kideghesho, 2010). The failure to recognise and respect boundaries by communities has caused encroachment and livestock incursions in protected areas. This has been a long lasting conflict over biodiversity management in protected areas with differing opinions between conservationist and local communities. While conservationists view protected areas as the source of ecosystem services and income through tourism (MEA, 2005; McClain *et al.* 2013, Kihwele, *et al.* 2018), local communities view them as potential sources for their livelihoods. This difference in perceptions and interests is progressively becoming the source for boundary disputes.

1.3 Statement of the Research Problem

Tanzania National Parks (TANAPA) especially in Tarangire National Park is

affected by boundary disputes. Masuruli (2001) and Kideghesho (2003) mentioned exclusion of local communities in biodiversity conservation as one of the reasons for boundary disputes. For sustainability of park resources, attention must be given to conservation interests as well as to local communities in adjacent areas and hence creating a balanced existence between humans and the environment. According to Wallace (2012), understanding and addressing disputes over boundary between humans and PAs is an important step in conservation success.

The eviction of local communities during expansion and creation of new PAs to provide room for wildlife conservation have taken place in almost all rangelands of Tanzania, example being Mkomazi and Tarangire National Park (Kideghesho *et al.* 2013). Expansion and creation of new PAs has gone hand in hand with alteration of boundaries and consequently creating disputes with local communities. Most of residents bordering Tarangire National Park in Babati District are engaged in mixed farming (crops cultivation and animal keeping). Boundary disputes in Tarangire National Park is caused by increase of populations, scarcity of land which led to high demand of land among village members for cultivation, cattle grazing and poor land planning and absence of clear and well defined boundary with Tarangire National Park.

Some boundary disputes caused frequent complaints to District authorities and poor relations with Park management. In Tarangire National Park little is known about the effects of boundary disputes on biodiversity conservation. Thus, there is a need to study and document the effects of PAs and local community boundary disputes in order to protect and conserve the biodiversity. Therefore, this study aimed at

assessing the effects of boundary disputes on biodiversity conservation in Tarangire National Park.

1.4 Objectives of the Study

1.4.1 General Objective of the Study

The general objective of this study was to assess the effects of boundary disputes on biodiversity conservation in National Parks in Tanzania.

1.4.2 Specific Objective of the Study

i. To examine causes of boundary disputes in Tarangire National Park.
ii. To examine the effects of boundary disputes on biodiversity conservation in Tarangire National Park.
iii. To evaluate the strategies for managing boundary disputes on biodiversity conservation in Tarangire National Park.

1.5 Research Questions

i. What are the causes of boundary disputes in Tarangire National Park?
ii. What are the effects of boundary disputes on biodiversity conservation in Tarangire National Park?
iii. What are the strategies used in addressing boundary disputes on biodiversity conservation in Tarangire National Park?

1.6 Significance of the Study

The result of this study provides knowledge on the boundary disputes and solution to resolve them. Boundary disputes are an obstacle to development of any society. This study is essential for adding inputs in developing strategies for addressing boundary

disputes between villagers and protected areas managers. Also the findings will be applicable to other areas in Tanzania that are facing similar problems. The study is important to the governments, wildlife managers, scientists and local communities to resolve boundary disputes in the interest of human and environmental wellbeing. In addition, the findings will be useful to academicians to supplement the existing body of literature as well as being used as reference for further knowledge.

1.7 Scope of the Study

The study focused on the effects of boundary disputes on biodiversity conservation in villages bordering Tarangire National Park in Babati District. The selected village was experiencing boundary disputes with Tarangire National Park. Also many complaints on boundary disputes from villages were reported in the District Commissioner office. To achieve the objective of this study the researcher focused on five villages bordering Tarangire National Park in Babati District.

1.8 Limitations of the Study

In conducting this study, the researcher encountered the following difficulties:-

i. Insufficient time and budget constraints for conducting the study. To address these problems, the study was conducted only in five selected villages in Babati District.

ii. Poor accessibility due to transportation and geographical locations. The researcher spent a lot time walking on foot from one village to another during data collection. This problem was solved by hiring motorcycle for easy access to households.

iii. A language barrier was also a limitation. Most of respondents were not able

to answer questions in questionnaires in English because they were standard seven leavers. To solve this problem, the researcher changed some questionnaires into Kiswahili language, but after the collection of the data, the analysis of responses was done in English.

1.6 Organisation of the Dissertation

This dissertation consists of five chapters. Chapter one presents introduction the background to the research problem, statement of the research problem, objectives of the study, research questions and significance of the study. Chapter two focuses on the literature review. It specifically presents definition of concepts, theoretical literature review, empirical literature review, policy review, conceptual framework and the research gap. Chapter three is on research methodology focusing the description of the study area, research design, target population, sampling procedures, sampling frame and sample size, sources of data, data collection techniques, data analysis interpretation and presentation, validity and reliability of research instruments and ethical issues. Chapter four presents the research findings and discussion while Chapter five focus on the summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two focuses on the review of literature related to the study. It gives insights into various observations which have been put forward by various scholars on boundary disputes at global level, regional level and local level. The chapter also explores the effects of boundary disputes on both biodiversity conservation and to local communities in Park adjacent villages. Based on the findings of the literature review, the chapter finally presents the research gap and conceptual framework.

2.2 Definition of Concepts

2.2.1 Biodiversity

In the context of this study the definition by Mace *et al.* (2010) is adopted who defined biodiversity as the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. The variety and variation may exist within species, between species and of ecosystems (CBD, 2014).

2.2.2 Boundary

Boundary is defined as a mark that demarcates limits and distinguishes one territory or legal jurisdiction from another (McNevin, 2012). Boundaries may be natural, such as rocks, trees and rivers. They can be artificial, such as iron pins, mere stones, monuments or fences. Other boundaries created by people include linguistic, political, economic, and social boundaries. Natural resources also play a role in

economic boundaries.

2.2.3 Boundary Disputes

The term boundary dispute is defined differently by various scholars. For the case of this study definition by Yoder (2003) is adopted who defines boundary dispute as the disagreement between two or more parties with different interests over the same piece of land with respect to rights to land, right to manage land and the right to use land. Boundary disputes arise out of many situations. A non exclusive list includes: a survey for a new purchase discloses encroachment by an abutter; the erection of a fence or the placement of a hedge causes a neighbour to reexamine the boundaries; the abandonment of an old road raises issues of ownership under the road; and a zoning application alerts neighbours to property line issues.

2.2.4 Protected Area

Protected area is defined as an area of land and/or sea dedicated to protection and maintenance of biological diversity of natural and associated cultural resources and managed through legal means (IUCN, 1994). Different PAs such as national parks, natural reserves and community-conserved areas have a significant role in conservation and to peopleôs livelihoods especially at local levels.

2.2.5 National Park

National park is a conservation entity established under National Parks Ordinance Cap 412 of 1959, with a legal mandate of preserving both natural and cultural resources of the country (IUCN, 1994). Only non-consumptive tourism, education and research are permitted in the national parks (TANAPA, 2008).

2.3 Theoretical Literature Review

2.3.1 Population Growth Theory

Neo-Malthusian theory of population explains that as the population grows also the demand to resources increases. Population growth is associated with an increase in human activities which consequently lead to resource degradation and depletion. Resource degradation and depletion have negative impact to conservation. Neo-Malthusian school of thought suggests that rapid population growth, environmental degradation, resource depletion and unequal resource access combine to exacerbate poverty and income inequality in many of the worldôs least-developed countries (Colin, 2006). These deprivations are easily translated into grievances and increasing the risks of social conflict.

Traditional Malthusian theory suggests that due to population growth human consumption needs will eventually exceed the availability of natural resources particularly food and hence causing several negative social outcomes like disputes, war, diseases, and famine. Malthusôs theoretical statement simply explains that population expands to the limits imposed on it by subsistence. The results when society reaches those limits are poverty and competition over natural resources. The model shows that when a society solely depends on natural resources for their livelihoods, the resources will become scarcer. The scarcity will be even more exaggerated by other factors such as climate change in conjunction with anthropogenic activities.

Natural resources scarcity will push the community to seek alternative available sources which in most cases is obtained from PAs. Dependence of local communities

on resources from PAs creates disputes and eventually destabilises peace and hence negatively affects conservation. Neo Malthusian explains that scarcity of renewable resources shapes human behaviour, and that there are linkages between this and natural resource conflict (Homer-Dixon, 1999). Over population in areas with scarce resources result in large scale migration in areas with available resources of which in most cases are national parks. Migration of people in areas adjacent to PAs results in antagonistic interests in resource use and hence results in disputes. Similar scenarios are seen in Ihefu wetland areas in Mbeya, Iringa and Kilombero valley as well as Kilosa in Morogoro regions where cattle herders have migrated with the livestock in search of forage as the result created conflicts with farmer and PAs authorities.

How human activity affects the environment has been discussed throughout centuries, dating back to Malthus famous bookñAn Essay on the principle of Populationò from 1789. The model that have been used in multiple studies are the IPAT (Impact, Population, Affluence, Technology) model. The IPAT model proposes a relationship between affluence, technology, population and environmental impact. Ehrlich and Holdren (1971) was the founderôs of the IPAT model. IPAT states that the impact (I) on the environment is a function of population (P), affluence (A) and technology (T). An increase in population has a negative effect on the environment due to increasing demand for land, resources and polluting activities, and is measured in population size (Ehrlich & Holdren, 1971).

There is a correlation between high human population, unsustainable resource use, resource depletion and scarcity and natural boundary conflict. Kideghesho (2004) explained that high population density leads to an increase in the demand for land

and, therefore, causing conversion of wildlife habitats to other economic uses such as agriculture and human settlements. Human population growth goes antagonistically with natural resources availability. Human population expansion goes parallel with expansion of cropland in order to meet food requirements at the expense of wildlife habitat. Expansion of cropland to provide food to the community results in habitat shrinkage and consequently boundary conflicts (WWF, 2010). According to Metta (2012), increase in human population prompts encroachments of wildlife protected areas hence causing tension between the authorities in the protected areas and the local communities.

2.3.2 Marxist Tradition Theory

Theories in the Marxist tradition have emphasised the conflicts of interest between groups with more or less control and ownership of natural resources. These approaches state that free markets create such great disparities between the ñhavesò and the ñhave-notsò that social conflict is inevitable. This concept is explained by the fact that National Parks and other forms of PAs restrict local communities from accessing land and other valuable resources, which for a long time have been exploited by them for their livelihood. Natural resource protection restricts local communities from accessing the resources. Conservation of natural resources is accused of denying people to resource as well as the source of wildlife which is the source of attacks, injury and diseases transmission.

There are many forms which natural resource conflicts may take. These may include legal land use right, human wildlife conflicts, or in some cases violent clashes over natural resources. On the opposite end of a scale of conflict may be harmony or

cooperation. As a resource is utilised, it becomes relatively scarcer. Environmental change may involve land and water degradation, over-exploitation, the illegal exploitation of wildlife and aquatic resources, extensive land clearing or drainage, or climate change. Further, as a resource is over-utilised or degraded, its availability for use is diminished and is therefore relatively scarcer and hence refers to as dimensions of depletion and degradation.

2.3.3 PAs boundary Disputes in Tanzania

Almost all PAs in Tanzania have boundary disputes due to the expansion or redefining the borders that have been encroached by the local communities (Kideghesho *et al.,* 2013). For example, between 2004 and 2007 TNP borders were redefined which led to the demolition of human houses and farms. A similar scenario was observed in Serengeti, Arusha and Mahale national parks. The extension of park boundaries which involves eviction of people is a source of conflicts between the parks and surrounding communities.

2.3.4 Cases of Boundary Disputes

In Latin America, some boundary and territorial disputes have continued since the 19th Century and remain unresolved (Yoder, 2003). Fierce boundary disputes currently affect ten of the nineteen independent countries of South and Central America. Land is usually the central object of these disputes because it is a major source of livelihood and an economic asset (Grigg, 1998). Land disputes are also caused by political differences between neighbouring communities (Yoder, 2003) and failure to abide by good land administration systems (Wehrmann, 2008). Some researchers (Naidu and Narsiah, 2009), state that common causes of land conflict

that lead to violence are closely related to social discrimination, political exclusion, and economic marginalization. Attending to land grievances is essential in developing a sustainable platform for peace (Yoder, 2003*)*. Different studies have explained the causes of land disputes between land users in both urban and rural areas.

Takeuchi and Marara (2011) stated that due to complexity in the value of land, the causes of land conflicts tend, therefore, to be similarly complex. The causes of conflicts can be economic, political, symbolic or a combination of these. The researcher grouped the causes of land conflicts into two main groups, inheritance as an official occasion to confirm and individualôs right to land, which constitutes the most important assets for ordinary rural households. In Rwanda, land disputes tend to occur within families at the time of inheritance (Takeuchi and Marara, 2011). Myenzi (2011) identified types and causes of conflicts involving; peasants against pastoralists fighting over common resources like land, water and grazing pastures; small farmers versus large scale farmers fighting for access of land for cultivation for both food crops and cash crops; boundary conflicts between villages; villages against reserve land authorities for example conflict between villages and TANAPA or villages against TANROADS when the authorities expand their land to villages or villages expand their land to reserve land.

Demographic causes such as the natural increase of population also creates high demand of land which is scarce and limited for both social and economic gain (Kideghesho, 2006). The high demand for land due to the natural growth of population cause high price of land and as a result leading to land conflict.

Moreover, unfair distribution of land among the society also contributes to land conflicts in both rural and urban areas. Wehrmann (2008) stated that unfair distribution of wealth and discrimination against certain groups, such as women or ethnic minorities aggravate conflicts.

United Nations (2012) explained that land and natural resources issues are almost never the sole causes of conflict. Land conflict commonly become violent when linked to a wide process of political exclusion, social discrimination and economic marginalization. Legal aspect causes land conflict between land users when there are loopholes, contradictory legislation, legal pluralism and traditional land law without written records (Wehrmann, 2008). Unclear boundary demarcations are other causes of disputes particularly in unsurveyed protected areas. In such areas, people mark the boundaries with features such as stones or planted trees which are of short life due to vandalism and ultimately result in boundary disputes.

2.3.5 Strategies for Solving Boundary Disputes

Disputes can be resolved through different means such as use of force, formal reconciliation, legal and institutional means. Good conflict resolution process is the one which stakeholders have the opportunity to understand each other's needs, develop a range of alternatives to address those needs and reach a mutual agreeable solution (Lewis, 1997). For the case of PA when conflicts directly affect the livelihoods of the neighboursô, a solution can be to conserve biodiversity while allowing individuals to access economic gains (Young *et al.* 2005).

Disputes can result in destructive effect or creative ones depending on the approach adopted to resolve. According to Hughes *et al.* (2009) the approaches are: win or

lose where one party gains, while the other loses; lose-lose strategies whereby neither of the parties wins but each party gets some of what it wants and resigns itself to partial satisfaction. The win-win approach attempts to maximize the goals of both parties through collaborative problem solving. Crawford (2012) mentioned that increasing community awareness of the park and its role to conservation, collective management of PAs, support small and medium sized community projects as the methods to resolve boundary disputes. The author further argued that improvement of law enforcement, particularly increased patrols can resolve boundary disputes between PAs and local communities.

2.4 Empirical Literature Review

2.4.1 Boundary Disputes in Protected Areas

In Africa, the growth of PAs has been particularly acute. Green and Paine (1997) estimated that the area of land under legal protection has increased thirteen-fold since 1970. The reason for this is to establish many new protected areas as a philosophy of protectionism, under which all human use of protected resources is prohibited (Chatty and Colchester, 2002). Such strict protection has gone parallel with expansion and rectification of boundaries and consequently the displacement of vast numbers of people who depended on resources from PAs (Brockington, 2002).

Natural resource use conflicts occur due to multiple and competing demands on resources. Land use conflicts can arise if user groups are excluded from participating in natural resource management. Disputes can also occur due to lack of information about policy and programme objectives, lack of clarity in laws and policies, inequity in resource distribution and poor policy (FAO, 2006). Examples of land use conflicts

between protected areas and local community in Tanzania are conflict between pastoralist and conservation in Loliondo (Maliasili Initiatives, 2011), conflict between Ngorongoro Conservation Area Authority (NCAA) and Maasai community (Lawuo *et al.* 2014). Demographic and social changes place more people in direct contact with wildlife thus as human populations grow, settlements expand into and around protected areas (World Conservation Union, 2003), as well as in urban and sub-urban areas. In Africa, human population growth has led to encroachment into wildlife habitats, constriction of species into marginal habitat patches and direct competition with local communities (Siex *et al.* 1999).

Conflicts in Nepalese PAs are inevitable as the park finite resources are used by the local people whereas park authorities impose ban on access, as these resources are required for the natural maintenance of ecosystems. In Nepal, it has already been proved that stick and fence or fortress approach to conservation is not viable for protecting PAs, as it is advocated by strict conservationists. Conflicts often occur between PAs and local communities due to the evictions and resettlements, exclusion from resources access and cost incurred to crops and livestock due to wildlife (Vedeld *et al.* 2012). Further, conflicts occur due to threats imposed to human lives and property by wildlife, insufficient share of benefits between the park and local communities and disparity in costs and benefits accrued by two groups (Vedeld *et al.* 2012).

2.4.2 Causes of Boundary Disputes

Human Population Growth: According to Kideghesho (2004), increase in human population goes parallel with an increase in the demand for land and therefore,

causing conversion of wildlife habitats to other economic uses, such as agriculture and human settlements. Further, high human population density prompts encroachments of wildlife protected areas hence causing tension between the authorities in the protected areas and the local communities (Songorwa, 2004). Population growth is linked to land use conflicts because of the need for additional land that is required for livelihood (FAO, 2006).

Economic Activities: Economic growth is associated with an increase in demand for natural resources such as land. In Kenya, increased agriculture and other development activities in areas adjacent to National Park blocked the wildlife dispersal areas (Stanonik, 2005). The original land owners, the Maasai, have been selling or leasing their land to farmers who wanted to capitalise on the agricultural potentials of the Athi-Kapiti Plains in Kitengala District (Morell, 1996). Consequently, this has led to more wildlife induced crop damage. Furthermore, the establishment of quarries within Kitengala dispersal area adjacent to Nairobi National Park attracted more people in the area. There have been dynamite explosions; trucks and machines constantly moving in and out of Kitengala making the area unsuitable for wildlife conservation (Western, 1997).

Human development is associated with illegal off take of wildlife resources and cause conflicts between inhabitants and Kenya Wildlife Services (Stanonik, 2005). The encroachments due to agriculture and mining activities in the Serengeti National Park and Maswa Game Reserve were reported to have affected wildlife conservation in these protected areas (Kideghesho, 2010). The author also reported that traditional

migratory routes are heavily settled by humans. In the process of controlling encroachments, the authorities in the protected areas were reported to be in a constant conflict with the encroachers.

Geographical Location: Geographical location of local communities has been reported to be the contributing factor to boundary disputes (Norton-Griffiths, 1996; Vandergeest, 1996). The communities living closer to the national parks or game reserves are likely to encounter problems with wild animals (Mayetta, 2004; Ogra, 2008; WWF, 2008). Also, a community living closer to a national park or a game reserve is tempted to engage in illegal activities including harbouring poachers who are from outside the villages

Legal Provision and Tenure: Governance of land resources refers to the institutions, policies and processes that are established to regulate their management, ownership, allocation, use and protection. Legal and tenure change in most cases go hand in hand with the denial of access to important natural resources which communities have enjoyed since time immemorial (Kideghesho, 2010). The denial of access to resources by the local communities as a result of the creation of protected areas is often linked to the debate of power and the role of the State (Sirima, 2010). The exclusion of local communities from their traditional lands has been widely debated in the literature and is associated with the powerlessness of the local communities versus the State in decision making (Raik, *et al.*, 2008). In Uganda, a legal change of Mount Elgon Forest Reserve to the national park had negatively affected the adjacent local communities (Gosalamang *et al.* 2004).

The change in the management system in reserves restricted local peopleôs access to resource and thus affecting their subsistence, income generation and socio-cultural needs that they previously enjoyed. The upgrade of Bwindi, Mgahinga and Kibale Forest Reserves to national parks in Uganda alongside with the implementation of new regulations caused conflicts between local residents and the authorities in the protected areas. The conflicts were due to evictions done by parks authoritiesô as well as the stricter enforcement of restrictions over resource use and prohibitions against the killing of crop raiding wildlife (Naughton, 1997).

A study conducted in Western Serengeti, Tanzania shows that evictions done by the government in order to upgrade Ikorongo, Grumeti and Kijereshi game controlled areas to game reserves have had some undesirable consequences for the livelihoods of people. These evictions not only prohibited people from accessing resources but also led to a number of social problems such as poverty, conflicts, prostitution, robbery, unemployment, diseases, disruption of education for school children and discrimination against women (Kideghesho, 2010).

Extension of Boundary and improvement of Boundary Features: Upgrading of low status protected areas into higher status goes with extension and improvement of boundary marks. For example, the study by Isdori (2016) in Mkungunero Game Reserve noted that during upgrading of the area from a game controlled area status the management extended its boundaries to approximately 5,000 hectares, with minimum consultation of adjacent communities of Kondoa and Simanjiro Districts. New boundaries displaced many residents of Ilkiushoibor and Kimotorokand consequently created boundary conflict between local community and Wildlife

Division (Sulle *et al.,* 2011).

Contradicting local Communities Interests and Conservation Objectives: Lund (2001) argues that for local land users, boundaries shifted due to zoning policies are often seen as a sign of further processes of privatisation caused by State planning. In social native space, zoning policies have also caused increased tenure insecurity and uncertainty of property due to land alienation, which has led to varied land disputes in different places. In Tanzania and Kenya, for decades, due to diminishing natural resources and increasing population pressure, land disputes over natural resources have taken place between pastoral and agricultural people and also between pastoral groups. In the worst cases, the increased resource conflict can turn into an ethnic conflict which can even turn into open violence (Madulu, 2005; Markakis, 2005).

2.5 Effects of Boundary Disputes

2.5.1 Habitat Loss

The rate of habitat loss in different parts of Africa varies from one place to another. For example, in Tanzania since 1986, to date about 43% of the original wildlife habitat has been converted to other uses while in Kenya it is 67% (IUCN, 1994). The situation in Ethiopia is more alarming as at the beginning of the twentieth century the country was heavily forested, with about 40% of its total area covered by dense forests but to date only 2.7% has remained as forests (Sarunday and Muheto, 2000). In Tarangire after long standing boundary conflict, the Park in 2004 decided to resurvey its boundary. After resurveying it was realized the land of five villages of Ayamango, Gedamar, Gijedabung, Qash and Orngôadida with a total area of 9.2 km²

was returned to villages. The land which was returned to local communities could be used for wildlife (personal conversation with park in charge).

2.5.2 Poor Relations between Local Community and PAs Authority

Boundary resurvey and demarcation involve eviction and translocation of local communities from their original villages of residence. Eviction of people sometimes involve use of force such as demolition of settlement, the result is poor relations between local communities and parks. It has been documented by Ogra (2008) that local communities experience other costs, such as crop raiding, livestock loss and wildlife incidents including human injuries, which influence negative attitudes towards PAs and make locals unwilling to cooperate on conservation activities.

2.6 Conceptual Framework of the Study

The conceptual framework is a simplified systematic conceptual structure of interrelated elements in some systematic form such as narrative statement or mathematical equation. It describes the relationships between and among concepts and variables (Swami, 2009). Thus, it identifies the variables required in the research investigation. Therefore, Figure 2.1 identifies the key concepts reflected in the study. It explains the causes of boundary disputes, effects to disputes and strategies for managing the disputes on biodiversity. The independent variables in this study are lack of markers, encroachment and illegal grazing to protected areas. Dependent variable is boundary dispute. The intermediate variables are boundary demarcation, clearing of tracks between marks; installation of pillar (beacons) with coordinates and involvement of community in boundary management.

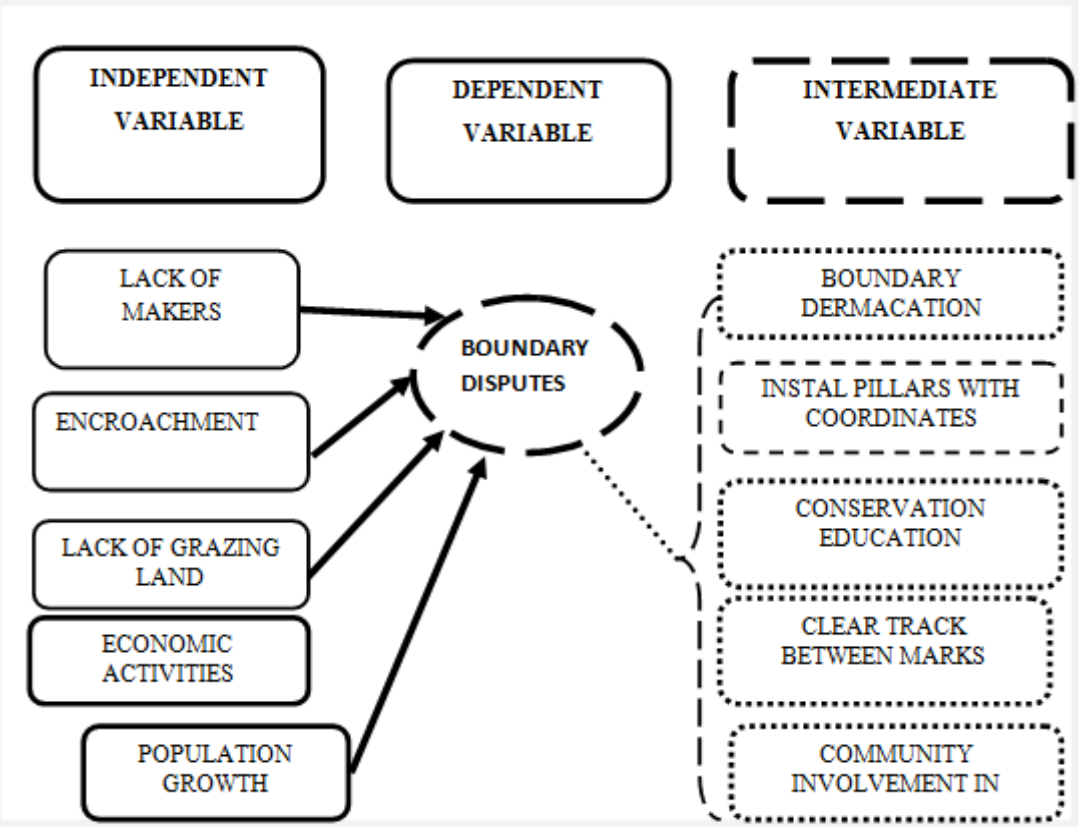

Figure 2.1: Cause and Effects of Boundary Dispute on Biodiversity Conservation

Source: Researcherôs own Construction, (2018).

2.7 Research Gap

The successful of conservation of resources in Protected Areas depends on the support of local communities from adjacent areas. The multiple cases of Gazzettement of new PAs and expansion of existing ones in most cases have been done by the Government without thorough involvement of local communities. New boundaries between PAs and villages have resulted in reduced land and availability of resources which are necessary for local communities to earn their livelihood. Many studies have been conducted in PAs focused on ecology, behaviour and distribution of wild animals (Sitati *et al.* 2003; Kissui, 2008). However, very little has been done to study the causes, effects and strategies to manage boundary

disputes between local communities and Protected Areas managers. Therefore, this study aimed at assessing the effects of boundary disputes on biodiversity conservation in order to bridge knowledge gap on aspects which have not been clearly explained and those for which other researchers did not get enough information and hence provides baseline information of understating the causes, effects and strategies of resolving boundary disputes.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter three shows the procedure that was followed in conducting the study. The chapter describes the research design, description of the study area, the target population for the study and sampling procedures. It also describes data collection methods, data analysis, interpretation and presentation. The chapter further describes validity and reliability of research instrument, ethical consideration, and scope of study, limitations and summary.

3.2 Research Design

Msabila and Nalaila (2013) defined research design as a plan on how a study will be conducted or detailed outline on how an investigation will be executed. Kumar (2002) explained research design as a plan, structure and strategy of investigation adopted so as to obtain answers to research questions. The study used cross-sectional research design as recommended by Benard (1994) where study population is visited once. This design allows the collection of data from different groups of respondents at a time.

The method is suitable for a descriptive study because it allows determination of the relationship between variables. The method is also less expensive as it involves less time to conduct the research.The reason for choosing this study area was based on the following reasons: First, the extent of human-wildlife conflict which exists between the park and adjacent villages. Secondly, the extent of existing and reported boundary disputes between local communities and the park.

3.3 Description of the Study Area

3.3.1 Geographical Location of the Study Area

Tarangire National Park is located between latitude 3°40'S and 4 °35 'S and longitude 35 °50 'E and 36° 20 'E at an elevation of between 1200 and 1600 meter above the sea level (Figure 3.1). The Park occupies an area of 2,642 km², making it the fifth largest park in Tanzania. Tarangire lies 60 km northwest of Babati township within the administrative districts of; Babati, Simanjiro and Kiteto in Manyara region, Monduli district in Arusha region and Kondoa district in Dodoma region (TANAPA, 2002).

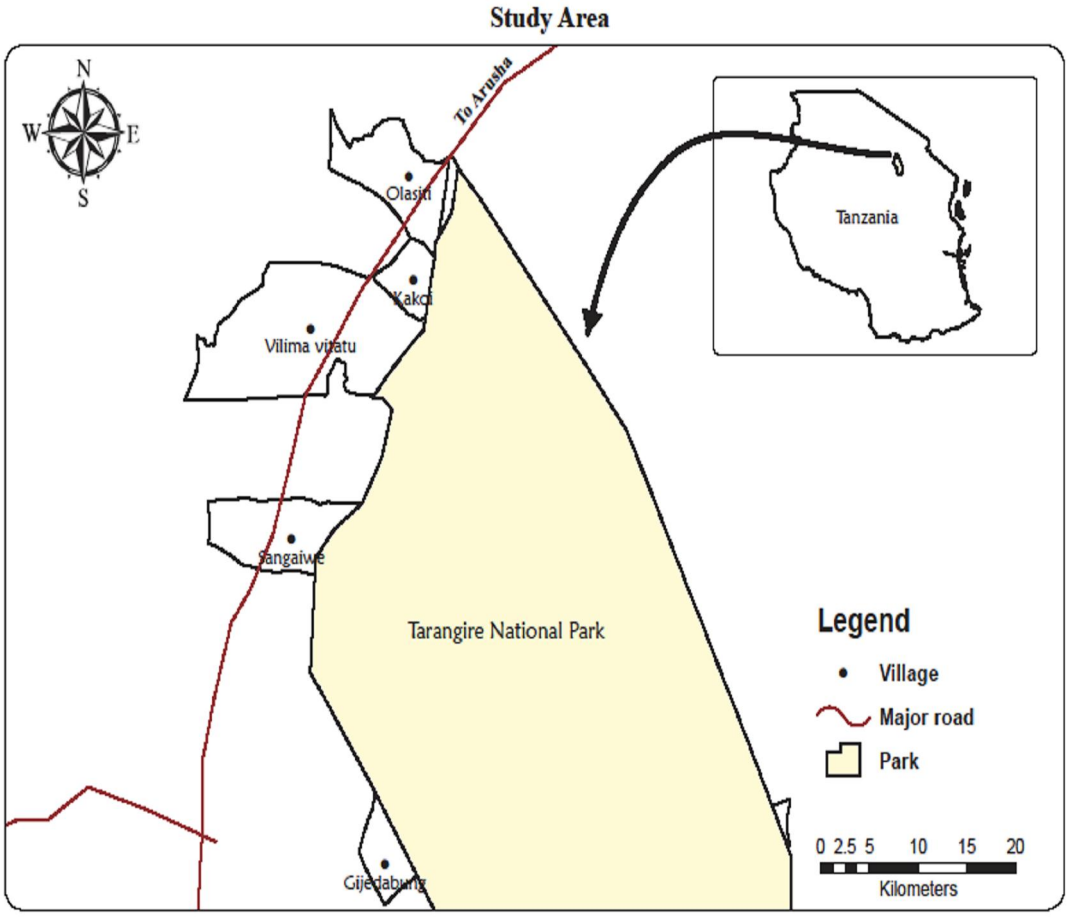

Figure 3.1: Map Showing Study Villages around Tarangire National Park

Source: Field Survey, 2018

3.3.2 Ethnicity and Economic Activities of Adjacent Communities

The villages surrounding Tarangire National Park are inhabited by people of different tribes mainly Maasai and Mbugwe with few other ethnic groups of Rangi and Iraqw. Primary economic activities in the study villages are mixed farming (crops and livestock rearing). Other economic activities are small businesses (shops, maize mills, food vending, petty trade, tourism, carpentry and transportation).

3.3.3 Climate

Tarangire National Park is characterised by semi-arid climate (Pratt and Gwynne, 1977). The rainfall pattern is bi-modal which consists of the short rains periods between October and December and long rains between February and May. Between long rains and short rains, there is a dry spell which is in January. The park receives an average annual rainfall of 660mm. Temperatures are highest from December to February and the months with lowest temperatures are June and July. The average maximum and minimum temperatures are 27ºC and 16ºC respectively (TANAPA, 2002).

3.3.4 Soils

The soils in Tarangire National Park vary from one area to other depending on terrain. Soils in well drained areas consist of dark-red loam. In flood plains and in depressions there are black clay soils commonly known as black cotton soils. These black cotton soils are sticky and expand in the wet season and are poorly drained (TANAPA, 2002).

3.3.5 Vegetation and Wildlife

Tarangire National Park is situated in the wooded steppe in an arid Acacia savannah belt that is dominated by Acacia and Commiphora species (TANAPA, 2002). The most important vegetation types are; riparian woodland, Acacia-Comiphora woodland, riverine grassland, Combretum-Dalbergia woodland, Acacia woodland, and grassland with scattered baobab trees. Tarangire provides habitat for a large diversity of fauna. Important wildlife found in the park include; elephant, zebra, wildebeest, lion, cheetah, leopard, lesser and greater kudu, oryx, hartebeest, buffalo, giraffe, impala, gerenuk reedbuck, bushbuck, and warthog. There are about 550 bird species including ostrich, parrots, eagles, pelicans, lovebirds, hornbills, weavers and kori bustard. The park is also a home of multitude of herpeto-fauna (TANAPA, 2002).

3.3.6 Human Population

The human population around Tarangire National Park has been increasing. According to the neo-Malthusian conflict scenario, population pressure on natural renewable resources likely leading to the conflict (Urdal, 2008). Natural population growth can result in an increase in demand for basic needs such as food which is occasionally obtained through poaching and expansion of crop land and consequently of land prices (Wehrman, 2008). High population growth rate as well as repeated droughts, ecological stresses and climatic changes are major drivers influence conflict over land (UN, 2005). The expansion of cropland threatens existence of dispersal areas and increases the isolation of wildlife habitats (Mwalyosi, 1991).

3.3.7 Land use and Socio-Economic Activities

Livestock husbandry is the main livelihood activity in the rangelands of Arusha and Manyara regions (MAFS, 2006; Sachedina, 2006). Livestock husbandry in villages adjacent to Tarangire National Park is mainly done by the Maasai which is the major tribe and who in migrated in the area in search of pasture for their livestock (TCP, 1998). The community around Tarangire National Park is no longer of pure pastoralists but agro-pastorals, businessmen and nomadic-pastoralists (Kimolo, 2001). Further, the increasingly shift from pastorals to agricultural farming is due to immigration of other ethnic groups and consequently, over time, change the nature of the Maasai.

Agriculture is gaining importance in areas around Tarangire National Park, because of poor performance of livestock due to recurrent droughts and the increase of human population (TCP, 1998). The main crops which are produced include food crops such as sorghum, millet, maize, bananas, beans, cowpeas, pigeon peas, green peas, sweet potatoes and cotton. Apart from livestock husbandry and agriculture other economic activities undertaken by communities living adjacent Tarangire National include: charcoal burning, mining, sport hunting, commercial hunting, local artisan, small business, food vending, sales of handcraft to tourists and working in tourist industry as local tour guides, cooks and porters (TANAPA, 2002).

The target population is the totality of objects under investigation (Kombo and Tromp, 2004; Adam and Kamuzora, 2008). The target population is also the group of people that a researcher wants to study (Mertens, 1998). The targeted population in this study was the head of households from villages of Sangaiwe, Vilima Vitatu,

Olasiti, Kakoi, and Gijedabung. The study also targeted employees from Babati District Council and Tarangire National Park

3.4 Target Population

Table 3.1: Population in the Study Villages

Villages	Total population	Male	Female	Total household
Gijedabung	3,201	1,634	1,566	**616**
VilimaVitatu	4,162	2,067	2,094	**800**
Olasiti	4,783	2,376	2,407	**920**
Kakoi	4,374	2,173	2,201	**841**
Sangaiwe	3,632	1,920	1,712	**698**
TOTAL	**20,150**	**10,171**	**9,980**	**3,875**

Source: Babati District Council Population Data, 2018

3.5 Sampling Procedures

The study used two sampling techniques to select the sample population. The techniques which were used include random sampling and purposive sampling.

3.5.1 Random Sampling

In random sampling, all members of the population are equally likely to be chosen as part of the sample. According to Gravetter and Forzano (2012), random sampling removes bias from the selection procedures and allows equal chance of selecting sample. Therefore, during the study random sampling was used to sample units in order to avoid bias. The sampling units for this study were households. Systematic random sampling was used to select the households from targeted village for interview. The first household was randomly selected followed by systematic sampling in selecting subsequent households. Subsequent households intended for interview were obtained through establishing sampling interval. Sampling interval (I) between households was established systematically using the formula below.

I = N/n

Where **N** = Total number of households in the village (as per village register)

n = Sample size

I = Interval between households

Table 3.2: Population and Sample Selection

S/N	Sample of respondents	Target population	Sample of respondents
1	Households	3,875	200
2	Park staff	24	8
3	District staff	32	10
	Total	**3,931**	**218**

Sources: Survey Data, 2018

3.5.2 Purposive Sampling

According to Black (2010), purposive sampling is a non-probability sampling method and it occurs when elements selected for the sample are chosen by the judgment of the researcher. Purposive sampling was used to select sample of interest of the study. The purpose is to select possible interviewees who may possess knowledge, ideas and experiences which are relevant to the research. For this study, the key informants such as District council staff, village leaders and Tarangire National Park staff were purposively selected.

3.5.3 Sampling Frame and Sample Size

The sampling units for this study were the households, because this is where all decisions are made with the head of household being the ultimate decision maker. In order to obtain a sufficient sample size, for satisfactory statistical inferences for each study village, sampling intensity of 5%was adopted during the study. This is

according to Boyd *et al.* (1981) who recommended that reasonable representative sample size for particular population under the study to be at least 5%. A total of 200 households from 5 study villages were administered with questionnaires. Further, the study involved interview with 8 park staff and 10 Babati District Council staff from the Department of Land and Natural Resources (Table 3.2).

3.6 Sources of Data

Krishnaswami and Ranganatham (2005) classified the sources of data into primary and secondary sources. The word data is defined to mean and include all the information that the researcher will collect or gather for the study (Mugenda, 2003). Therefore, the study employed both primary and secondary sources of data.

3.6.1 Primary Data

Primary data are original information that the researcher directly collects and have not been previously collected (Krishnaswami and Ranganatham, 2003). Kothari (2004) explained the primary data as data which are collected afresh and for the first time, and thus happen to be original in character. Primary data collection involved Participatory Research Approach (PRA). This method facilitates learning from communities in an interactive manner (Kajembe, 1994). PRA was done through Focus Group Discussion (FGD).

FGD guided with a check list collected data on causes of boundary disputes, effects of boundary disputes, strategies for managing disputes. Household survey was carried out by the use of structured questionnaire with both open-ended and closed questions to collect data from the villagers. Data on demography, resource

availability and access, socio-economic activities, boundary disputes, effects of disputes and strategies for managing boundary disputes were collected through household survey.

3.6.2 Secondary Data

According to Kothari (2004), secondary data refers to the data which have already been collected and analysed by someone else. Secondary data were obtained throughout the study by reviewing various literatures, both published and unpublished from library, government offices and internet. Secondary data were gathered from government offices particularly from Districts Land and Natural Resource Department. The information collected included; crops and livestock production, boundary disputes and strategies of resolving boundary disputes.

3.7 Data Collection Techniques

3.7.1 Reconnaissance Survey

The reconnaissance intends to acquaint the research with the study area and select study villages. During reconnaissance survey a researcher tested the questionnaires. Pre-testing of questionnaire is important in order to identify weaknesses, ambiguities and omissions before finalising the tool.

3.7.2 Questionnaires

Both open and close-ended questionnaires were used in data collection (Appendix I). The questionnaires were prepared in English and interview was conducted in Kiswahili. The answers which were provided by interviewees were again recorded in English in order to enable the analysis. The questionnaires were administered to

villagers in selected households and heads of households were targeted for the interview. Two hundred questionnaires were administered to villagers in the selected households and heads of household were targeted for the interview.

3.7.3 Key Informants Interviews

Key informant interviews were conducted with 8 park staff and 10 Babati District Council staff. Interview with park staff provided information on causes of boundary disputes, effects of boundary disputes and strategies for managing boundary disputes. Interviews were done with individuals through the use of open and close-ended questionnaires (Appendix II).

3.7.4 Direct Field Observation

Field observation was used during the field visit to see physically what was going on in the study area and compare with what have been said by the respondents during household survey and key informants interview. Field observation was used as a means of cross checking the consistencies of the responses.

3.7.5 Focus Group Discussions

Krueger (2014) describes a focus group as special type of group in terms of purpose, size, composition and procedure. The FGD constitutes a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes (Gibbs, 1997). Also, the FGD explores a range of opinions/views on a topic of interest and analyses the meaning of findings that cannot be explained statistically (Dawson *et.al.,* 1993). FGD were conducted with selected groups of individuals from two villages (Vilima vitatu and Kakoi) to complement information obtained

from questionnaire and key informant interview.

FGD were conducted with selected groups of individuals from two villages (Vilima vitatu and Kakoi) to complement information obtained from questionnaire and key informant interview. Focus discussions were done with two groups and each group had 10 people of mixed gender. A single group had five members. People who were selected for focus FGD were experienced and have lived in the villages for long period.

3.7.6 Documentary Literature Review

Review of relevant records, both published and unpublished documents, including books, scientific journals, dissertations and working papers, from various sources like libraries and the internet were conducted. Also, information obtained from TANAPA headquarters, Tarangire National Park and Babati District Council were considered for the study. The review focused on the conservation history of Tarangire National Park, boundary disputes, and strategies used by local communities to address boundary problems.

3.8 Data Analysis, Interpretation and Presentation

Qualitative data was analysed using content analysis techniques. Content analysis is the set of methods for analysing the symbolic content of any communication (Singleton *et al.* 1993). Quantitative data, the data obtained from questionnaires were first coded, compiled and then entered in the computer. Statistical Package for Social Science version 20 and Microsoft Excel program were used during analysis of the quantitative data. The results from the analysis were summarised and descriptive

statistics were presented in percentages, frequencies and means. Frequencies and percentages presented quantitative results on causes of boundary disputes, effects of boundary disputes and strategies used to resolve boundary disputes in the study areas.

3.9 Validity and Reliability of the Research Instruments

3.9.1 Validity of Research Instrument

Validity refers to the extent to which data collection method or methods accurately measure what they were intended to measure the extent to which research findings are really about what they profess to be about (Saunders *et al.* 2007). For this particular study the validity of the quantitative data was cross-checked with the qualitative information through triangulation by examining evidence of information from different sources of data. The quantitative and qualitative data were used in an integrated way to answer the research objectives.

3.9.2 Reliability of the Research Instruments

Reliability refers to the extent to which data collection technique or techniques will yield consistent findings. According to Creswell (2008), reliability means extent the scores of an instrument are stable and consistent. Reliability can be more easily understood by identifying the testing methods for stability and consistency. To this particular research study, the similar method of data collection from different sources was expected to yield accurate findings.

3.9.3 Ethical Considerations

In this study, all documents consulted and cited was acknowledged. The

confidentiality and anonymity of all respondents was guaranteed as none of the respondents filled their names. The contents of the filled questionnaires were not discussed with anyone to ensure confidentiality. During data collection village leaders accompanied the research to ensure no respondent participated in the research process without being informed and received his or her consent.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

Chapter four presents the research findings and discussion. The chapter presents demographic characteristics of the respondents, causes of boundary disputes, effects of boundary disputes on biodiversity conservation and strategies used for managing boundary disputes in Tarangire National Park. Results and discussions are based on the research objectives and research questions set in chapter one. Results were obtained using questionnaires, interviews, focus group discussions, and field observations.

4.2 Demographic Characteristics of the Respondents

This section deals with the demographic characteristics of the respondents. This section presents demographic characteristics of the respondents in the study area.

4.2.1 Age of the Respondents

In this study persons aged 18 years and above were interviewed. These people were considered having knowledge on the environment surrounding their residences. This was important to characterise the age structure of the community in determining the effects of boundary dispute. This age category was supported by Leppenen *et al.* (2012) who observed that teenagers were less concerned about the environment than their parents. Table 4.1 shows that the higher percentages of respondents (38%) were aged ranging between 51 and 65 years, while people aged 65 years and above were 11%. This indicates that the studied population is largely headed by people with ages ranging between 51 and 65 years. The lower number of older people involved in this

study suggested that there were fewer older people in the villages as the current life expectancy for the country stands at about 64 years.

There was a slight difference in representation across age groups in the studied villages, suggesting a more or less equal distribution of the population across age group and thus providing similar opportunities to all members of the community. Such age distribution may contribute in portraying sufficient information on boundary disputes as well as the origin of the disputes in the study area since they have good experience. This means that both the young and the old people are engaged in boundary disputes.

Table 4.1: Age Structure of the Respondents

Age category in years	Frequencies	Percentages
21-35	55	28
36ï 50	46	23
51ï 65	76	38
65 and above	23	11
Total	**200**	**100**

Source: Field Data, 2018

4.2.2 Gender of the Respondents

During the study both male and female respondents were interviewed. About 54% of the respondents were males while 46% were females (Table 4.2). Similarly, Mulder *et al. (*2009) reported that hunting-oriented activities and tolerance for hunting was much higher among boys and men in the Netherlands. Understanding the gender of respondents is vital in getting diverse views on matters of boundary dispute in villages around Tarangire National Park, as there is always a perceived difference in views between males and females as they are differently affected.

Table 4.2: Gender of the Respondents

Gender of the respondents	Frequencies	Percentages
Male	108	54
Female	92	46
Total	**200**	**100**

Source: Field Data, 2018

4.2.3 Education Level of the Respondents

Study results indicate that 47% of respondents had no formal education. About 45.5% had primary education while only a small proportion (7.5%) had secondary education (Table 4.3). High level of illiteracy in the study villages means low ability to understand the importance of conservation as well as various laws and regulations which safeguard National Parks. Generally, education transforms people on how they interact with their environment for better livelihoods.

Further, it is presumed that formal schooling is an important contributor to the skills of an individual and to human capital. The higher the education levels the higher the living standards and a high degree of exposure and civilization. Therefore, based on the high degree of illiteracy level observed, there is a likelihood of increased conflicts as people generally take advantage of illiteracy in persuading their agendas under the expense of the people.

Table 4.3: Education Level of the Respondents

Education	Frequencies	Percentages
No formal Education	94	47
Primary Education	91	45.5
Secondary Education	15	7.5
Total	**200**	**100**

Source: Field data, 2018

4.2.4 Occupation of the Respondents

Understanding the occupational status of a community is of critical importance in establishing the economic status of the people as well as in the planning of developmental endeavours. Pastoralism is the number one economic activity performed by people living in the studied villages accounting for 44%, followed by agriculture that accounted for 43% and then trade and entrepreneurship, which accounted for 13% (Table 4.4).

Table 4.4: Occupation of the Respondents

Occupation	Frequencies	Percentages
Pastoralist	164	44
Agriculture	157	43
Trade and entrepreneur	46	12.5
Others	2	0.5
Total	**200**	**100**

Source: Field Data, 2018

The high percentage for pastoralists and agriculturalists entails the possibility of land tenure and land use conflicts. There has been increasing conflicts of livestock incursions within protected areas in Tanzania whereby livestock keepers are claiming to be allowed to graze their animals in wildlife managed areas which results in human wildlife conflicts. This scenario provides insights and indications of existence of boundary disputes as people will be claiming land for agriculture and grazing. Because of their dependence on land, they faced challenges on management of land and land use in general. The two activities need land as the factor of production and if not well planned and allocated with sufficient resources can result in encroachment of the park and consequently disputes with park management.

Hence, because of their dependence on land, they face challenges on management of land and land use in general. Similarly, people in both Botswana and Kenya experienced high levels of conflicts with wildlife, but people in Botswana held much more positive attitudes than those in Kenya (Sifuna, 2010). Some studies have shown that economic loss experienced from wildlife interactions pulls attitudes quickly in a negative direction (Thorn *et al.* 2012; Røskaft *et al.* 2007; Kideghesho *et al.* 2007).

4.2.5 Duration Respondents Stayed in the Villages

Understanding the duration of stay of respondents was presented in terms of intervals to enable the respondents to fit in any category listed. The results show that the majority of respondents have stayed in the villages for long period of time (Table 4.5). About 76% of respondents have stayed in their respective villages for more than 20 years while 16% of respondents mentioned to stay in their village for a period between 11 to 20 years. Only a small proportion of respondents stayed in their respective villages for a period of between 1 to 10 years. From the results, it implies that many respondents are familiar with their environments and have adapted to them.

Table 4.5: The Duration of Stay of Respondents in the Study Area

Duration in years	Frequencies	Percentages
1-10	16	8
11-20	32	16
More than 20	152	76
Total	**200**	**100**

Source: Field Data, 2018

4.3 Existence of Boundary Disputes

There is an incredibly accepted concern that there is a boundary conflict between the park and the people surrounding the park. This is revealed by 77% of the respondents who showed that the existence of conflicts between the villages and the park (Table 4.6). However, some of the villages do not accept that there is a boundary conflict with the park (23%). Despite a small proportion of the interviewees, it is of a conservation concern and requires a detailed analysis as to why they deviate from the prediction, something which is not part of the current study.

The higher level of illiteracy accompanied by pastoralism and agriculture as major economic activities could be possibly escalating the conflict by forcing people to illegally enter into the Park for grazing and farming. It has been observed that people do not accept to have been consulted and involved on establishment of protected areas; as such they are claiming back their land without taking into account the economic benefits at macro level. This is the case with various areas such as Mkungunero Game Reserve, Maswa Game Reserve, Serengeti National Park, Lake Manyara National Park etc.

For instance, the boundary of Maswa Game Reserve was modified seven times to provide land for villages. Therefore, these could likely be fueling conflicts to villagers as they have some evidences that some villages were given party of the protected areas by the Government following their demands. The findings on conflict existence same with other studies in both Botswana and Kenya who experienced high levels of conflicts with wildlife, but people in Botswana held much

more positive attitudes than those in Kenya (Sifuna, 2010), (Table 4.6).

Table 4.6: Existence of Boundary Disputes

Existence of conflict	Frequencies	Percentages
Yes	155	77
No	45	23
Total	**200**	**100**

Source: Field Data, 2018

4.4 Causes of Boundary Disputes in Tarangire National Park

During the study the respondents were asked the causes of boundary disputes between the park and their villages. In responding to the question, the respondents pointed out various reasons including expansion of park boundary by force, lack of education, misuse of power, politics, and lack of communication, problem animals, political influence, corruption and misunderstanding with the government (Table 4.7).

Table 4.7: Causes of Boundary Dispute

Causes of boundary disputes	Frequencies	Percentages
Expansion of boundary by force	52	14
Low education level	51	13
Lack of community participation	39	10
Misuse of power and use of force	68	18
Lack of communication	39	10
Corruption	69	18
Misunderstanding with government	37	10
Others	23	7
Total	**378**	**100**

Source: Field Data, 2018

The results show that misuse of power and use of force (18%) is one of the major causes of boundary disputes between the park and local communities. About 18 percent of the respondents mentioned misuse of power and use of force during

boundary rectification to contribute to boundary disputes. Interview with the park management revealed that boundary resurvey has observed parts of few villages including Gijedabung and Vilima vitatu to exist inside the park. This called for eviction measure for these villages to vacate the park. Respondents explained that because TANAPA is a Government body it uses the power vested to them to grab the land and deprive villagers the resources they used to access. Furthermore, Vilima vitatu village complained that park staff during 2004 boundary resurveys, misused the power and used force to evict them from their land which was annexed to Tarangire National Park.

According to Cambridge English Dictionary 1995, corruption is defined as a dishonest behaviour, especially by people in position of power. About 18% of respondents mentioned corruption as one of the causes that were mentioned fuelling boundary disputes. Corruption weighed the same as misuse of power and use of force as about 18% of all respondents mentioned it as one of the causes of boundary disputes (Table 4.7). Interview with park management revealed that due to corruption, village leaders inappropriately allocated a considerable size of land to few people who immigrated to their village reducing the available land to communities. Also, during focus discussion with villagesô leaders it was mentioned that dishonest staff allow people to stay inside the park illegally. This has led to shrinkage of village land and forced people to encroach the park and consequently resulted in boundary conflicts.

The results in (Table 4.7) shows that 14% of respondents mentioned re-survey of boundary done by the park management to cause boundary disputes. The

percentages observed suggest that there are diverse perceptions of boundary management. Information from the park management confirms that there was no any boundary expansion except there has been regular resurvey of park boundary in-order to solve the problem of encroachment by communities. That means, the claim of boundary expansion by villagers need to be treated with care as it is distorting the reality. Complaints from villages on the park management pertaining to denying the right to access the land is unacceptable. This finding is in support of Kideghesho *et al.* (2007) who also implicated the use of force by Government agencies as among the causes for conflicts between PAs and adjacent communities.

Education is meant to transform the society in-order to promote sustainable development. Educated community is capable of utilising its surrounding environment without much compromising the ability of a particular environment to meet the need of future generation. Boundary disputes occur because of low awareness and knowledge on importance and benefit which can be derived from conservation activities. About 13% of respondents mentioned lack of education as one of the causes of boundary disputes. Education level of respondents is an important factor as it enables someone to easily understand various laws and regulations which safeguard PAs, as a result it determines the perceptions towards conservation and consequently boundary disputes ensue.

Therefore, it is anticipated that with uneducated society like that surrounding Tarangire national park, it is quite difficult for them to understand long-term conservation benefits. For example, Kideghesho *et al.* (2007) showed that literate people living close to protected areas have a tendency of supporting the ideas of

conservation, compared to illiterate ones suggesting that population with large proportion of people without formal education tend to be prone to conflicts.

During the study about 10% of respondents mentioned lack of community participation during marking of the boundary as also a cause of disputes (Table 4.7). The results concur with findings by Crawford (2012) who showed that isolation of local communities in decision making process and banning of locals to access natural resources as the main source of boundary disputes in Nyungwe National Park in Rwanda. Mfunda *et al*. (2012) noted that sharing of benefits derived from conservation as well as involvement of local people in conservation influence a positive relation and hence conservation support from the adjacent villages.

The existing legal and administration framework recognise decision making by representation as well as the role of technocrats. But there has been a gap in information sharing and communication between the representatives and the large community. During this study, communication break-down was not a concern as majority of respondents among the surveyed villages showed that there was good communication of information and decisions.

However, 10 percentages of community members from the villages complained that there was a break-down in communication between the park and the villages (Table 4.7). Failure in conveying deliberations at a right time and to specific people could be critical in contributing to occurrence of conflicts. Misunderstand with Government was mentioned by 10% of respondents as among the causes of boundary disputes in the study villages (Table 4.7). In the same vein, Kidegesho *et*

al. (2007) explained that poor relation and interaction between local community and the employees in the protected areas to contribute into boundary disputes.

4.5 Effects of Boundary Disputes

During the study, respondents were asked to explain the effects of boundary disputes in their respective villages. Respondents mentioned loss of livestock, destruction of crops, death of people, loss of habitat and land, poverty, poor security and poor governance as the effects of boundary disputes (Table 4.8).

Table 4.8: Effects of Boundary Disputes

Effects of boundary disputes	Frequencies	Percentages
Loss of livestock	150	23
Destruction of crops	141	22
Death of people	127	20
Loss of wildlife habitat	73	11
Poor security	88	14
Others	61	10
Total	**640**	**100**

Source: Field Data, 2018

Results in Table 4.8 show that large proportion of respondents complained about the loss of livestock as one of the effects of boundary disputes. Village members are blaming the park for failing to feed the livestock confiscated following the conviction when found grazing into the park, thus driving livestock into fatalities. This is however pitting when the confiscated livestock involve a court procedure, where the fate has to be decided by the law. Court procedures normally take long time and sometimes result in death of livestock due to hunger and starvation.

Sometimes boundary disputes are resolved through eviction of people who encroached the park.

The disparity in proportion of complaints among the five villages could be attributed to the type of major economic activities and major ethnic groups that dominate a particular village. In this case and when it involves pastoralists, there is a tendency of loss of livestock in the process of eviction. For instance, Lissu (2000) reported that eviction of Maasai pastoralists from Mkomazi Game Reserve in 1988 resulted in death of livestock due to lack of grazing land and water. Further, boundary resurveying by TANAPA and installation of permanent and physical markers improved boundary identification and visibility, with subsequent displacement of some villagers. The improvement of boundary management is negatively perceived by some village members, causing some conflicts between the park and some village members.

The park management confirmed to have participated in clearing farms that were located inside the park boundary. The destruction of crops by park was considered by villagers as inhumane fueling the magnitude of the existing conflicts. Crop destruction accounted 22% of the effects of boundary disputes (Table 4.8). Similarly, there has been a tendency of some herders and farmers to ignore the boundary and enter into the park in order to acquire land to meet their interest. The result shows a remarkable difference on the level of occurrence of crop raiding by wildlife. The feeling of crop destruction could be attributed to its fertile and crop production capacity as it is the leading area for maize production in Rural Babati.

During the research more than 20% of respondents mentioned death of people as one of the effects of boundary disputes (Table 4.8). But this study could not successfully establish the number of people who claimed to have died from wildlife. When villagers were asked to provide hard data on death cases, they only connected it with the evictions of people who had entered into the park and established settlement. In most cases during eviction, local community confronts and resists. Resistance and confrontation force park personnel to use warning signs together with the use reasonable force for self-defense and eviction exercise.

There have been some incidents of intentional setting of wildfire to restrain wildlife from entering village areas. Similarly, farming and livestock grazing as a result of encroachment reduce habitat quality for wildlife. During the study about 19% of the overall sampled population mentioned loss of habitat as the effects of boundary disputes (Table 4.8). Interview with park officials, mentioned loss of wildlife habitat that occurs from illegal settlement, grazing and farming inside the park. Similarly, in 2004 the park gave a portion of its area measuring about 9.181 km^2 to five adjacent villages of Loibosiret and Orngôadide after park boundary resurvey and resettlement of existing boundary dispute that reduced potential habitat for wildlife. This finding is in agreement with that by Veldhuis *et al*. (2019) who observed that human population growth induced activities which resulted in loss of wildlife habitat and ecosystem services in Serengeti Mara ecosystem.

During the study about 14% of the general sampled population revealed poor security as one of the effects of boundary disputes. Respondents explained that during eviction exercise people tend to resist and confront with park rangers.

Resistance and confrontation result in tension and lack of security among the local communities in the adjacent villages. Respondents of Sangaiwe village explained that in 2004 people were displaced from their village and an area of about 5.36 km^2 was taken by the park. This resulted in confrontation between the villagers and Tarangire National park staff, as the result the villagers became unsecured.

The results have shown that loss of livestock, destruction of crops, death of people, loss of habitat and land, poverty and poor security as the major effects of boundary disputes. Respondents revealed that predators tend to feed on their livestock. Also, during eviction of people livestock remained unfed which causes death. Few respondents were positive towards conservation and mentioned loss of wildlife habitat as the effects of boundary disputes because in the course of resolving the conflicts there is conservation land which goes to villages.

4.6 Strategies for Managing Boundary Disputes on Biodiversity Conservation

Table 4.9: Strategies for Managing Boundary Disputes

Strategies	Frequencies	Percentages
Provision of conservation education and awareness raising	49	15.7
Benefit sharing	39	12.5
Information sharing between government and villages	67	21.5
Boundary marking	44	14.1
Strengthen security	18	5.8
Combat corruption	51	16.3
Others	44	14.1
Total	**312**	**100**

Source: Field Data, 2018

The study further explored strategies which are used in order to manage boundary disputes. Various strategies were mentioned by respondents to be used in managing

boundary disputes. Some of the strategies which were mentioned included provision of conservation education and awareness raising, benefit sharing, information sharing between government and villagers, boundary marking, strengthen security and combat corruption. The 15.7% in acceptance of the use of conservation education and awareness was a strategy mentioned to manage boundary disputes. Conservation education and awareness creation was the reason for establishment of Community Conservation Services Department in 1988 by TANAPA.

Some of villages are located in proximity to the park, where it is believed that conservation education and awareness raising is a very important agenda to communities. Responses from villages were consistent (Table 4.9) indicating that probably there is same feeling among the villagers that community conservation services are not effective as it was supposed to be. There is a need to re-think how conservation education should be provided to community because a study by Crawford (2012) in Nyungwe National Park, Rwanda and Wapalilla (2008) in Mikumi National Park suggested that improvement of conservation education and strengthening community awareness is of paramount important towards minimising boundary disputes.

The results show benefit sharing as one of the strategies to resolve boundary disputes. During the study about 12.5% of respondents in the study villages mentioned benefit sharing as a strategy to manage disputes (Table 4.9). Discussion with Outreach Department Park Warden revealed that villages which have benefited from Tarangire National Park tend to support conservation initiative which consequently reduced boundary conflicts. The study findings are similar to result by

Crawford (2012) in Nyungwe National Park who shows that supporting small and medium sized community projects with environmental friendly projects such as beekeeping increases the level of collaboration among conservation stakeholders and hence reduces boundary disputes.

During the study, 21.5% of respondents mentioned information sharing between government and villages as one of the strategies to manage boundary disputes (Table 4.9). Information sharing was important for managing boundary disputes as indicated by percentages with overall score of 21.5%. The negative connotation on accepting the role of information sharing justifies the denial of the communities in accepting and recognising the re-surveyed boundary. Respondents explained their concern to share various information and policy with government in order to understand development issues which exist in their villages. With this negativity, there is a need to change mode of communication from the park to community such as involving the district and regional governments to act as mediators and channels for information communications.

During the research, 14.1% of respondents mentioned boundary marking as one of the strategies for managing boundary disputes (Table 4.9). It was explained that lack of conspicuous boundary markings which separate villages, make local communities enter into the park unknowingly. However, during the focus group discussion respondents proposed to the park to erect big and conspicuous beacons so as to be easily seen. Further, respondents requested TANAPA to clear the boundary wide and open ñmkuzaò so that the boundary can be easily seen.

During the study, about 5.8% of respondents mentioned strengthening of the security as one of strategies to manage boundary conflict (Table 4.9). Strengthening of security was regarded by villagers as ineffective measure to address boundary security. This is because it is known that there are rangers within the park management that are responsible for security. However, the role of park rangers is not well received by communities due to existence of mistrust that results from conservation.

During interview respondents explained that demand for land for agriculture and livestock keeping forced the local community to purposefully encroach the park (Table 4.9). However, respondents recommended the park to strengthen security and make sure that the boundaries are well secured in-order to deter people from encroaching with the consequences of eviction which in most cases is associated with confrontation and disputes. During the study, about 16.3% of respondents mentioned combating corruption as one of the strategies of managing boundary disputes (Table 4.9).

Respondents explained that combating corruption among leaders will control conflicts as they are the ones who receive, accept and give land to people who immigrate into villages bordering the park. It was further explained that some of the immigrants encroach park areas due to shortage of land in the villages and hence become the source of boundary disputes. The result shows that there are other strategies to resolve boundary disputes. During the study about 14.1% of respondents could not choose from the list of strategies outlined in (Table 4.9) in the study villages.

4.7 Summary

In relationship to objectives one and two the results are clear that boundary disputes do exist in the study villages of Babati District. A large proportion of respondents explained the existence of boundary disputes between the park and adjacent villages. Respondents mentioned that the Park has been expanding its boundaries by force and without involving and getting consensus of villagers from adjacent villages. Also, respondents mentioned lack of education to be one of the causatives of boundary disputes. Education is a key for understanding various laws and regulations which safe guard the existence of park. Respondents mentioned problem animals as the causes of disputes. The majority of respondents mentioned elephants as the main problem animal which is responsible for crop damage.

In terms of objective number three the results show that various strategies were mentioned in order to manage boundary conflicts. Respondents mentioned provision of conservation education and awareness rising, to local communities as the strategies to manage boundary. Boundary disputes occur because of low awareness and knowledge on importance and benefit which can be derived from conservation activities. Also, respondents mentioned benefits sharing as one of the methods to make local communities realise benefits of conservation. The study conducted by Metta (2012) in Saadani National Park showed that adjacent local communities bears the cost of wildlife especially elephants.

The author suggested consideration of and support for ensuring that the individuals who bear the costs of any conservation policy are also those who subsequently benefit through social services and income generating projects. During the research,

the respondents further, suggested that the boundary between the park and villages should be cleared and marked so as to make it visible to villagers.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusion and recommendations of the study.

5.2 Summary

The study on effects of boundary disputes on biodiversity conservation in protected areas was conducted in five villages bordering Tarangire National Park. The main objective of the study was to assess effects of boundary disputes on biodiversity conservation in the park. During the study various sources of literature were reviewed. Two hundred respondents from the study villages were randomly selected while purposive method was used to select 8 staff from Babati District Council for interview. The study used questionnaires, key informants and FGD for data collection. Quantitative Data were analysed by using Statistical Package for Social Science (SPSS) and Microsoft excel whereby content analysis was used to analyse qualitative data.

5.3 Conclusion

The study results revealed the existence of boundary disputes as it was mentioned by the majority of respondents (77%). The majority of respondents mentioned expansion of park boundary by force, lack of conservation education, misuse of power and use of force and corruption to cause boundary disputes. Respondents explained loss of livestock, destruction of crops, death of people and poor security as one of the effects of boundary disputes. Respondents mentioned information sharing between government and park adjacent villages, provision of conservation education

and awareness raising among villagers, boundary marking and combating against corruption as the major strategies to manage boundary disputes.

Owing to the findings, analysis and discussions, the researcher concluded the study as follows: -Wildlife management and biodiversity conservation particularly in Tarangire national Park has increasingly been affected by existing boundary conflicts. This was largely caused by the lack of physically visible markers at the time of gazattement as the boundary was there but the start of resurveying by TANAPA and installation of permanent and physical markers was the escalation of the conflicts because it was when it was revealed that some villages are within the national park. Equally, reduced pastures in the village lands have also contributed to increased livestock incursions into national park with manifestation on the continuing boundary conflicts.

5.4 Recommendations

i. Involvement of local community during redefining and demarcating park boundaries. The study also recommends information sharing between government and villagers in boundary deliberations. Emphasis should be given to education and awareness to local communities on the importance of conservation and the contribution of conservation to local communitiesô development. Implying that all the deliberations of the meetings between villagers and park management must reach the broader community as failure for that could possibly be an opportunity for people to resist and result in dispute.

ii. Tarangire National Park Management should involve local communities in

decision-making with regard to wildlife conservation through neighbourhood meetings because it is likely to forge community membersô spirit for conservation.

iii. Enhancement of good governance in local authorities to ensure trustfulness and wise decision making in boundary dispute resolutions. Trustfulness of local authority institutions encourages the community members to use local authorities as their means of boundary dispute resolution instead of taking illegal action against the conflicting side.

iv. The government should implement land use planning and local governments are supposed to arrange regular joint meetings involving villages bordering Tarangire National Park to identify challenges and agree on possible solutions.

v. Support environmentally-friendly projects such as bees and poultry keeping to local communities through income generating groups so as to provide the alternative source of income apart from agriculture and livestock rearing which requires large land resources.

5.5 Recommendations for Further Studies

It is recommended that, further research should be done to assess the appropriate modality for involvement and empower community towards boundary demarcations in protected areas. Also further research is needed to evaluate TANAPA Income Generation Programs (TIGPs) contribution done to communities bordering Nationals Parks.

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APPENDICES

APPENDIX 1: Household survey questionnaire

Dear respondents

I am a student from the Open University of Tanzania (OUT) undertaking a Research on Effects of boundary disputes on biodiversity conservation in protected areas: A case study of Tarangire National Park in Babati district. I kindly do request your assistance to enable the completion of my research work as a prerequisite for partial fulfillment of my Master Degree in Management of Natural Resource Assessment (MANRAM).

Kindly respond to the questionnaire form attached herewith.

Individual background

1. Village é é é é .wardé é é é é é ..Districté é é é é é é é é

2. Education level é é é

3. Genderé é é é é

4. Ageé é é é é .

5. Ethnic groupé é é .

6. Are you a resident of this village?

   Yes é é é é é é é é é é

   Noé é é é é é é é é é é é é

7. If No, where do you come from?

Villageé é é é é é é é é é é é ..District é é é é é é é é é ..

Region é é é é é é é é é é

8. For how long have you been living here? é é é é é é é é é é é é é .

9. What are your economic activities in this village?

(i) é é é é é é é é é é é é é é é

(ii)é é é é é é é é é é é é é é é é

(iii)é é é é é é é é é é é é é é é é ..

(iv)é é é é é é é é é é é é é é é é é ..

10. What do you know about boundary dispute?

é é

é é

11. Do you have any boundary dispute with the National Park?

Yesé é é é é é é é

Noé é é é é é é é é

12. If the answer in question 11 is YES what are the causes of boundary disputes?

(i) é

(ii) é .

(iii)é é é é é é é é é é é é é é é é é é é ..

(iv)é é é é é é é é é é é é é é é é é é .

(v) é é é é é é é é é é é é é é é é é é .

(vi)é é é é é é é é é é é é é é é é é é

13. Are there any effects of boundary disputes?

Yesé é é é é é é é é é é é é é é é .

Noé é é é é é é é é é é é é é é é é ..

14. If the answer above is YES, what are the effects of existing boundary dispute?

i. é é é é é é é é é é é é é é é .

ii. é é é é é é é é é é é é é é é é é

iii. é é é é é é é é é é é é é é é ..

iv. é é é é é é é é é é é é é é é ..

15. What are strategies used to solve boundary dispute between villages and National Parks?

i. é

ii. é ..

iii. é .

iv. é ..

16. Is there any effects of biodiversity due to boundary disputes?

I. é

II. é .

III. é ..

IV. é ..

Thank You Very Much for Your Cooperation

APPENDIX II: Checklist for government officials

Dear respondents

I am a student from the Open University of Tanzania (OUT) undertaking a Research on Effects of boundary disputes on biodiversity conservation in protected areas: a case study of Tarangire National Park in Babati district. I kindly do request your assistance to enable the completion of my research work as a prerequisite for partial fulfillment of my Master Degree in Management of Natural Resource Assessment (MANRAM).

Kindly respond to the questionnaire form attached herewith.

Individual background

1. Education level é é é

2. Genderé é é é é

3. Ageé é é é é .

4. Ethnic groupé é é .

5. For how long have you been living here? é é é é é é é é é é é é é .

6. What do you know about boundary dispute?

é é

é .

7. Do you have any boundary dispute with communities living adjacent to protected area? Noé é é é é é é é é

Yesé é é é é é é é é é é ..

8. If the answer is YES, mention protected areas with boundary disputes?

I. é é é é é é é é é é é é é é é é é .

II. é é é é é é é é é é é é é é é é

III. é é é é é é é é é é é é é é é é é ..

IV. é é é é é é é é é é é é é é é é é ..

9. What are the causes of boundary disputes?

I. é é é é é é é é é é é é é é é é é é

II. é é é é é é é é é é é é é é é é é é

III. é é é é é é é é é é é é é é é é é ..

IV. é é é é é é é é é é é é é é é é é .

10. Are there any effects of biodiversity due to boundary disputes?

I. é é é é é é é é é é é é é é é é é ..

II. é é é é é é é é é é é é é é é é é é

III. é é é é é é é é é é é é é é é é é é é .

IV. é é é é é é é é é é é é é é é é é é é .

11. What are strategies used to solve boundary dispute between villages and National Parks?

I. é

II. é ..

III. é .

IV. é

Thank You Very Much for Your Cooperation