TESTING THE ATTITUDINAL IMPACT OF A CONSERVATION TOOL OUTSIDE A PROTECTED AREA:

The case of the Kitengela Wildlife Conservation Lease Programme for Nairobi National Park

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DECLARATION

This Research Paper is my original work and has never been submitted to any university for examination purposes.

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DEDICATION

To my wife Josephine,

and my children Sinkiyian, Makui and Koikai.

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ABSTRACT

This study was set up to look into socio-economic factors that influenced the success of the Kitengela wildlife conservation lease program for Nairobi National Park. The specific objectives were: **(i)** To establish whether the size of land owned by the respondents influenced their willingness to join the lease Program **(ii)** To find out the socio-economic expectations of the pastoralist landowners in the Kitengela area and suggest how wildlife conservation could help meet some of them in a sustainable way **(iii)** Identify strategies that were socially, culturally and economically acceptable to the landowners in mitigating the human-wildlife disharmony prevalent in the dispersal area **(iv)** To outline the socio-economic and cultural factors likely to influence the success of the lease program as a conservation tool in the dispersal area and suggest areas of improvement and **(v)** To gauge the attitudinal impact of the Wildlife Conservation Lease Program on the landowners.

A total of 100 household heads were interviewed using an interview schedule. 52 of the respondents were on the Lease program while the rest (48) were not. Both groups were randomly selected.

77% of the respondents were males while 23% were females. The average age of the respondents was 47 years with the majority between the ages of 33-40 years. The average number of dependants was 7.2. The majority attended primary school (47%) and secondary school (12.2%). 3.3% were in tertiary institutions. The average level of formal education was 4.5years with 42% of the respondents having no formal education while 10% had over 12 years of formal education. About 60% of the respondents practised semi-pastoralism as their main occupation while the rest practised semi-pastoralism alongside trade and employment.

The average size of landholding was 150 acres and ranged between 4 -1,216 acres. The prices of land ranged between KSh.50,000 and 600,000 and averaged KSh.188,400. Prices were directly influenced by proximity to shopping centres, the tarmac road and the National Park. 50% of the respondents lived within a range of 1-10 kilometres from the Park boundary (Empakasi River). The average fenced area (for cultivation and grass reserves) was 10 acres.

The respondents lost 54% of their cattle during the year 2000 drought. However, by April 2003, cattle numbers had built up by 44%. A significant proportion of the increase emanated from cattle purchases. Emerging fences were cited as the main hindrance to cattle movement and grazing.

The numbers of three wildlife species namely: Eland, Wildebeest and the Coke's Hartebeest were reported to have decreased, while those of four species namely: Ostrich, Gazelles, Hyenas and Lions were reported to have increased.

94% of the respondents recommended the sharing of revenue and compensation for losses as the best incentives for wildlife conservation outside the Protected Area. All those on the Lease program were willing to remain on it and 94% of them cited school fees as the greatest benefit they got from the program. 45.1% suggested that the lease contract duration be increased.

Ninety one percent of the respondents thought that killing of lions to show bravery was no longer in practice and 82.7% felt that lions were only killed in retaliation for killed livestock. Attitudes towards wildlife were found to be similar to those in the 1999 ACC survey (for those not on the Lease program) but considerably different from those of people on the lease program, the latter

being in favour of wildlife. The conclusion was that the lease program had positively altered landowners' attitudes towards wildlife.

The recommendations include the expansion of the lease program, strengthening of the landowners Associations, supporting livestock keeping and eco-tourism activities, exploring ways of benefit sharing with the Park, and addressing predation issues.

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LIST OF ABBREVIATIONS

ACC	African Conservation Center
ILRI	International Livestock Research Institute
KILA	Kitengela Ilparakuo Landowners Association
WCLP	Wildlife Conservation Lease Program
KWS	Kenya Wildlife Service
TWF	The Wildlife Foundation
ASAL	Arid And Semi Arid Lands
DRSRS	Department of Resource Surveys and Remote Sensing

1 CHAPTER ONE

1.1. Wildlife conservation and tourism in Kenya

1.1.1. Introduction

In Kenya, the economic role that tourism plays is tremendous. Within the tourism sector, wildlife constitutes a major component. Wildlife benefits accrue at many different levels. It makes a major contribution to national income and helps to meet national development goals. More so, revenue from tourism is crucial because sources of national income, employment, public sector earnings and foreign exchange are all limited (Emerton, 1999).

The fact that wildlife contributes substantially towards the economy of Kenya has been well documented. Emerton (1997a) noted a 5% contribution to Gross Domestic Product, a 10% contribution to formal sector employment and more than 30% contribution to foreign exchange earnings. In Kenya, more than 70% of wildlife is found outside the Parks and Game Reserves, on privately and communally owned land. However, most of the direct benefits accruing from wildlife are channelled to the central government. Another substantial amount goes to national or international companies such as Safari firms, tour operators, or overseas consumers (Wells 1996a, Leader-Williams 1996; Emerton, 1999).

One of Kenya's biggest challenges is to fight the escalating poverty levels that are threatening more than half of the population. Rapidly growing human populations have worsened the situation in that the government can hardly cope with the geometric increase in the number of mouths to be fed, and people to be provided with other basic amenities. In the Kitengela area, like in many other places of the country, human population has grown rapidly over the last ten years. In the 1999 population census, the population stood at 17,347 up from 6,548 in 1989 (Kristjanson

et al, 2001). With 47.7% of the Kenyan population living below the poverty line, it is no wonder that poverty eradication features prominently among the government's priorities (Wahome, 2001; ROK, 2000).

At community level, locally available resources constitute a key component for poverty alleviation. In many pastoralist areas of Kenya, wildlife is abundant and its prudent utilization can generate substantial incomes for households, thereby alleviating poverty. In the wildlife conservation sub-sector, land use policies, and utilization of wildlife resources will need to be harmonised for sustainable local and international benefits. Under the current policies, the landowners are sidestepped in that the presence of wildlife on their land has had little to offer in economic terms (Kenya Wildlife Service 1991). Paradoxically, the areas adjacent to the Parks experience the highest costs associated with the presence of wildlife (Bourn and Blench 1999). Sustaining the Parks, reserves and wildlife dispersal areas that support such parks is therefore a crucial and urgent necessity if these benefits are to be maintained or improved. Kenya can boast of spectacular parks and Reserves where wildlife thrives. One of these really unique parks is Nairobi National Park.

1.1.2. Nairobi National Park and the Kitengela Wildlife Dispersal Area

Nairobi National Park was established in 1946, not only as the first National Park in Kenya but also in East Africa. It covers an area of 117 square kilometres and is situated 2°18' South and 36° 50' East. It borders Nairobi city to the North and Machakos and Kajiado Districts to the East and South respectively (Gichohi 1996).

The Park is one of the most remarkable ones of its size anywhere in the world in that its great plethora of wildlife is separated from the city of Nairobi by just afence. Among the wildlife

species in the Park are migratory ones like the wildebeest, zebra, eland and giraffe (Western, 1997; Gichohi, 1996 and Croze, 1978). These animals seasonally move in and out of the park in search of pastures, and also to breed. The Park is also an important breeding ground especially for the black Rhino. However, only a river marks the Southern boundary of the park. The animals cross it as they enter the park or as they leave into the Kitengela wildlife dispersal area. A dispersal area is an expanse of land privately or communally owned, and which lies adjacent to an unfenced protected area. For Nairobi National Park, the southern unfenced side borders the Kitengela area. The bi-annual rainfall variation within the ecosystem is a major reason for the movement (Gichohi 1996). The two rainfall maxima occur in March/May and October/December and hence create a seasonal difference in the availability of water and forage for wildlife.

The importance of the Kitengela wildlife dispersal area for the survival of Nairobi National Park is well documented (see Croze (1978), Omondi (1984), Gakahu & Goode (1992), Gichohi (1996), and Mwangi and Warinda (1999). The people living to the immediate south of the Park are mainly Maasai semi-pastoralists. The land is privately owned under Cap.300 of the Laws of Kenya. However, wildlife on the land is owned by the government, where the Kenya Wildlife Service is the official custodian. Within the framework of current law, any damage on crops or livestock cannot be compensated by the government (GoK 1989). This followed the amendment of section 62 of CAP 376 Laws of Kenya where compensation was outlawed.

The landowners have for a long time experienced heavy losses incurred by wildlife mainly through livestock predation and stiff competition for water and forage (Bourn and Blench 1999). It is therefore no wonder that recent studies have shown that landowners' attitudes towards wildlife and the Kenya Wildlife Service are significantly negative (Mwangi and Warinda 1999).

These attitudes impact negatively on wildlife conservation in the area that accommodates a wide array of species, both migratory and resident. However, due mainly to demographic and changing land use patterns the area has been shrinking with time (Omondi 1989, Gichohi 1996, Mwangi and Warinda 1999). For the park to maintain its glory, private landowners in the dispersal area must cooperate by keeping their land open for wildlife movement. Due to recurrent droughts in the area, incomes from livestock fluctuate rather frequently (Kristjanson *et al*, 2002). Livestock keeping is still an important occupation for the Maasai (Thompson 2000). Livestock is a source of wealth, prestige, direct cash, and sustains other socio-cultural relationships (Mol, 1996; Bekure *et al*, 1991).

Studies in the area have shown that lack of economic benefits was the main reason for the negative attitudes towards wildlife (Mwangi and Warinda1999; Nkedianye 1999). There are serious human-wildlife conflicts in the area mainly due to competition for forage and water and the frequent livestock predation (FoNNaP 2001). Income from wildlife would come in handy to seal this gap. In addition, a good working relationship between the private landowners and the Kenya Wildlife Service would go a long way in harmonizing the presently conflicting interests.

1.2. Problem Statement

The Kitengela area, which lies to the immediate south of the Park, is characterized by a cross-section of varying activities, which are not mutually enhancing. Demand for land along the Park boundary has pushed the prices unnecessarily high. Along the Namanga road and Kiserian-Isinya roads to the east, and west respectively, prices have also been pushed up by the demand for land near the tarmac roads. Parcels of land in these high-demand areas are beginning to shrink in size (Mwangi and Warinda, 1999; Nkedianye, 1999; Gichohi, 1996). There are more fences that are joining along the roads and along the Empakasi River.

For animals to migrate to the Southern part of the ecosystem (especially Lenchani and Enkirgirri where the threatened Wildebeest breed) they have to pass through these privately owned parcels of land and then cross the Namanga road to and from the Park. At present, there are many conflicting interests antagonizing the private landowners on one hand and the custodians of wildlife on the other. If wildlife conservation is to be sustained, solutions to the existing problems must be sought.

The main reasons why there was disharmony was that there were conflicting interests. The government, through the Kenya Wildlife Service, insisted that all the wildlife, including that on privately owned land, belonged to the state. Under current law, utilization of wildlife next to a protected area is prohibited. To make matters worse for private landowners, any livestock injured or killed, or crops destroyed by wildlife could not be compensated for. The landowners on their part felt robbed of their right to security and protection of property. Many times they took it upon themselves to protect their property, sometimes by killing the wildlife (FoNNaP 2000), an act considered illegal under law.

1.3. Objectives of the study

To establish the factors contributing to the disharmony existing between the Kitengela private landowners and the managers of wildlife in Kenya and to suggest possible sustainable solutions. The specific objectives of the study are:

i. To establish whether the size of land owned influenced the landowners' willingness to join the Lease program.

ii. To find out the socio-economic expectations of the pastoralist landowners in the Kitengela area and how wildlife conservation could help meet some of them in a sustainable way.

iii. To identify strategies that are socially and economically acceptable to the landowners to help mitigate the prevailing disharmony in wildlife conservation outside the Nairobi National Park.

iv. To outline the socio-economic factors likely to influence the success of wildlife conservation tools in the area adjacent to Nairobi National Park and suggest ways of their applicability elsewhere to avert similar conflicts.

v. To gauge the impact of the wildlife conservation lease program (started in year 2000) on the landowners, by comparing the wildlife-related attitudes of those landowners on the program *vis-à-vis* those who were not on the program.

1.4. Rationale of the study

Most past studies in wildlife conservation around Nairobi National Park have focussed on the importance of the ecosystem. These studies have clearly shown that Nairobi National Park would be fundamentally altered if the dispersal area to the south were to be blocked, see Jari (1982); Omondi (1989); Gichohi (1996); Mwangi and Warinda (1999); Kristjanson *et al* (2002).

However, those past studies failed to fully address the root cause of the problem; that of land use changes and what the private landowners to the south thought of the future of wildlife conservation on their land. In view of the economic importance of the Park and other similar ones especially in revenue generation and bio-diversity conservation, incompatible land use practices outside National Parks could rob the country of seriously needed foreign exchange and lead to the loss of biodiversity. For Nairobi National Park a continued decline in wildlife numbers could lead decision makers to think of alternative uses of the area and fencing it might lead to its becoming a mega zoo, devoid of the vibrant life it now exhibits.

In addition to the above, there is also the ever- increasing problem of population growth in Kenya. This rapid growth, if not properly planned for, has the potential to squeeze out all wildlife outside protected areas. Yet approximately 70% of Kenya's wildlife lives outside protected areas. Without this "outside the Park" component, Kenya would lose about 70% of its wildlife, leading to serious socio-economic and ecological ramifications for the whole nation. Proactive measures of mitigating the conflicts that lead to wildlife decimation must therefore be sought now if a "too late" scenario is to be evaded.

The findings of this study will most likely be instrumental in informing policy makers, researchers and landowners on the very pertinent issues associated with wildlife conservation in general. The case of Nairobi National Park could then be used to provide key information on the way forward for many other parks in the world. The same information could be used by the managers of wildlife to improve on their traditional management methods, which have contributed to the current negative attitudes toward wildlife and its official custodians.

A landowner-based view, which has been lacking in the previous studies, is employed in this study. This makes this study unique in that it basically employs a bottom-up approach as opposed to the traditional top bottom methods hitherto employed. It is expected that community friendly conservation practices will lead to sustainability.

This study was aimed at addressing a key issue in conservation circles today – that of conservation outside protected areas. For Nairobi National Park, its glory would wane considerably if the Kitengela dispersal areas to the south were to be completely blocked by either settlements or fences.

The Lease programme as a conservation tool is a new and innovative initiative that targets the landowners who own the land under Cap.300 Laws of Kenya. Whereas Mwangi and Warinda (1999) noticed among the landowners a willingness to leave their land open if in return they were compensated, the viability of the Lease program as a conservation tool, its application and implementation had not been studied.

The amount of revenue that Nairobi National Park earns annually is not less than KSh..47 million (Rep. of Kenya 1995). This study was intended to provide critical information for the success of the Lease programme that is expected to disburse millions of shillings to landowners every year, and to explore other possible conservation interventions. If the dispersal area was blocked, East Africa's second greatest migratory spectacle (Gichohi, 1996) would be lost and Nairobi National Park fundamentally altered.

1.5. Scope and limitations

1.5.1. Geographical scope

The immediate area to the south of Nairobi National Park covers three former Group ranches viz. Empakasi (6000 acres), Kitengela/Olooloitikoshi Group Ranch (30,000 acres approx.) and Kisaju Group Ranch (25,000 acres approx.), making a total of about 60,000 acres. This area is marked by the Empakasi River to the north, the Namanga road to the east and the Isinya-Kiserian road to the west. The roads connect at Isinya. The resultant area forms a Triangular shape which the Friends of Nairobi National Park (FoNNaP) have prioritized as their phase I of the Wildlife Conservation Lease programme.

This study targeted the first phase area of the programme and the researcher expected that the findings would be replicated not only in other subsequent phases but also in areas adjacent to other protected areas elsewhere in Kenya and in the world. The area chosen would also ensure that costs on travelling for both the Researcher and his assistants were manageable. The targeted area formed the most critical routes through which wildlife migrated into, and out of the Nairobi National Park. Without this part, other areas down south would be irrelevant to the Park.

This study's findings will be used as a case study, which can be applied elsewhere in the country. The lessons and insights generated will be handy in dealing with the ever-increasing problem of accommodating wildlife alongside burgeoning human populations within shrinking portions of land. The guiding theories in this study were meant to give a sociological dimension to wildlife conservation while informing academicians of the changes and challenges inherent in conservation circles and especially within the pastoral context.

1.5.2. Theoretical and analytical scope

This study is guided mainly by two theories: the social exchange theory by C. Homanns and Peter Blau and the conflict theory as advanced by Lewis Coser Ralf Dahrendorf and Karl Marx.

The main thrust is anchored on qualitative analysis of variables (for example attitude measurement).

2 CHAPTER TWO

2.1 Literature Review and Theoretical Framework

Introduction

This section deals with the related literature review mainly concerning wildlife conservation in general but drawing examples from elsewhere. The general picture regarding the status quo as far as wildlife conservation in Kenya is also discussed. Most of these activities are to be found in the Arid and Semi-Arid Lands (ASALs) of Kenya.

The last part of this chapter gives the theoretical basis upon which this study is anchored. Both the social exchange theory and the conflict theories are discussed in relation to the topic at hand.

2.1. Related Literature Review

2.1.1. Arid and Semi-Arid Lands (ASAL) and Wildlife Presence

The definition of the Arid and Semi-Arid Lands (ASAL) may vary slightly but it is generally accepted as that land that has a ratio of rainfall to open pan evaporation of less than 50% (Southgate and Hulme, 1996). Under this definition, 22 districts lie at least partially within ASAL (see table below).

Table 2.1. Kenya's districts in ASAL

% of district in ASAL category	Districts	% of total ASAL area in Kenya
100	Isiolo, Marsabit, Garissa, Wajir, Turkana, Mandera	62
85-100	Kitui, Tana-River, Taita Taveta, Kajiado, Samburu	25
50-85	Embu, Meru, Laikipia, Machakos, West Pokot, Kilifi, Kwale, Baringo	10
30	Lamu, Narok, Elgeyo Marakwet	3

Source: Chris Southgate and David Hulme (1996), p.2

The ASAL areas are also home to Kenya's wildlife populations. Most of it co-exists with the livestock that the mainly pastoralist communities keep. The way of life of the pastoralists supports, to a larger extend the thriving of wildlife. They move from place to place with their livestock in search of water and pastures. However, recent trends in population growth have continuously exerted pressure on the existing rangelands. The resultant effect has been increased human-wildlife conflicts.

The conflicts arising from wildlife-human interactions are aggravated by the fact that Kenya's land tenure policies are not clear-cut. The rights of both wildlife and people even on private land are not adequately represented. On private land where the individual takes precedence, wildlife is still owned by the government (Juma and Ojwang 1996).

2.2. Costs, benefits and Conflicts in Wildlife Conservation

Introduction

This section looks at the costs incurred by pastoralists as a result of living with wildlife; revenues accrued from wildlife and the sources of human-wildlife conflicts.

2.2.1. Costs of Living with Wildlife

There are mainly three areas of conflict between humans (especially pastoralists) and wildlife. These are feeding competition, disease control and predation (Grootenhuis and Olubayo, 1993). As a result, co-existence of livestock and wildlife is threatened by declining profits mainly pushed down by increasing costs arising from the intermingling of wildlife and livestock.

In areas adjacent protected areas, the costs arising from predation could be enormous and constitute the biggest part of costs (FoNNaP, 2002; Mwangi and Warinda 1999; Mwangi, 1996). In the Kitengela wildlife Dispersal area for example, predation of livestock was the most controversial issue between KWS and the local communities. The losses incurred went beyond just the livestock itself and its monetary equivalent, but also the time and energy spent in protection of livestock. Furthermore, owning or not owning livestock among the Maasai means more than just the economic part of it. Livestock is a source of prestige, a crucial medium of exchange that cements social links amongst them.

The costs of conserving wildlife are insurmountable to communities, they might not conserve even if they wish to. The burden of wildlife damage falls heavily on pastoralist communities – disrupts other economic activities and increases the opportunity costs of alternative land uses foregone or diminished (Emerton 1999: 14; Mbogoh *et al*, 1999). Lack of utilization of wildlife is a major disincentive to landowners.

The total economic cost of wildlife would comprise of management costs plus costs to other activities and opportunity costs. Management costs would include costs of equipment, capital, wages, running costs, policing, etc while costs to other activities would include livestock losses, crop destruction, human injury and damage to structures. Opportunity costs involve alternative land uses, money spent, time or resources and profits foregone (Emerton 1999: 12; Kristjanson *et al* 2002; Mwangi and Warinda 1999). Wildlife damage to agriculture and livestock production can serve to make already insecure livelihoods even more marginal in economic terms.

In the Kitengela dispersal area, wildlife causes considerable loss to landowners as it moves into and out of the Nairobi National Park, a movement that is seasonal every year: Lions, cheetahs, leopards and hyenas kill livestock especially during the wet season (FoNNaP 2002; Mwangi and Warinda 1999). There are plenty of examples showing how much livestock keepers and cultivators lose due to the presence of wildlife on their land (Kiyiapi *et al* 1996; Barrow *et al* 1996; FoNNaP 2002).

Apart from the predation problems, diseases are difficult to control because they affect both livestock and wildlife and while Acaricides are used to control ticks on livestock, nothing could be done to control ticks on wildlife. Major diseases of concern include East Coast Fever (ECF) Malignant Catarrhal Fever (MCF) Trypanosomiasis, Foot and Mouth Disease (FMD), Rinderpest and brucellosis (Waghela and Karstad 1986). All these, among others, push the cost of maintaining livestock extremely high (Mwangi and Warinda 1999; Kristjanson *et al* 2002; Mwadzaya 2001; Grootenhuis and Alubayo 1993; Mwangi, 1996; Kiyiapi *et al* 1996; Rossiter 1986). These costs are a major disincentive to wildlife conservation.

Emerton (1999:13) summarized the total costs of wildlife to livestock and agriculture thus:

$Ca = ac_h + acv + ac_l + act + ac_s$

Where:

ac_h = harvest costs/losses

ac_v = veterinary costs

ac_l = value of livestock kills

ac_t = time spent in crop and livestock protecting

ac_s = damage to other farm structures

The above would be coupled with the opportunity costs, which included those of crop income foregone, livestock income foregone and also wild resources utilization foregone (Emerton 1999:14).

The current conservation paradigm is anchored on command and control policies whose rationale fails to make sense to those living with wildlife; it cannot compete with alternative land use options in most areas (Pearle D. 1997). To give incentive to people to tolerate wildlife, maybe livestock keeping should be strengthened to form a combination lucrative enough to compete against land cultivation especially in marginal lands (Heath B. 1996).

2.2 Economic Benefits of Wildlife

These economic benefits may be split into those that accrue directly to the national or intentional economy versus those that would flow into the local communities where wildlife is harboured and the link between them.

2.2.2. National and International benefits of wildlife

In terms of total value, a pro wildlife argument carries considerable weight to counter the contrary view. The major justification is that there is need to conserve it for the benefit of both for present and future generations. More specifically, Emerton (1999:4) enumerates direct values such as live sales, meat, hides and skins, trophies, education, tourism and research activities. Indirect values include ecological and environmental services linked with wildlife and its habitat such as carbon sequestration, storm protection and climatic control (Burchard, 1999).

There are also the option and existence values. The former include possible future uses for example touristic pharmaceutical, industrial and agricultural applications while the letter would include intrinsic values regardless of use such as their cultural, aesthetic and request significance (Emerton 1999:4).

Besides the general global value of wildlife there are specific benefits that accrue to national economies. In Kenya for example, direct income from tourism contributes about 5% of GDP. Further, it accounts for over 10% of national formal sector wage employment and accounts for over 30% of total annual foreign exchange earnings (Emerton 1999: 5). Overall, of the US $ 420 million income from tourism in 1989, about 50% of it could be attributed to wildlife (Emerton 1999:4).

It is needless to say that wildlife can make considerable difference to national economies in terms of income, and thereby help to meet national development goals. In African countries where sources of income, employment, public sector earnings and foreign exchange are all limited, income from wildlife could form an essential part of the economy.

Emerton (1999) summaries the total economic benefit of wildlife (TEB_w) as follows:

$TEB_w = Y_n + C_n + G_n + X_n + L_n + E_n$

where:

Y_n = national income

C_n = national consumption goods

G_n = government revenues

X_n = forex earnings

L_n = national employment opportunities

E_n = other national economic goals

In Kenya, it is clear that wildlife based tourism attracts a significant amount of revenue which accrues mainly to the central government especially from the National Parks and reserves. An example is Nairobi National Park, which is only 117 square kilometers. The Park is one of those that make profit in the country (Table 2.2 below).

Table 2.2. Nairobi National Park Revenue by year and Amount in KSh. (1996 – 1999.

Month	**1996-97**	**1997-98**	**1998-99**
January	6,796,290	2,989,850	4,293,555
February	12,967	3,254,545	4,210,055
March	5,113,650	3,102,370	3,622,810
April	3,496,350	3,005,550	3,423,130
May	3,676,600	2,622,590	3,353,340
June	4,056,710	2,443,240	3,635,475
July	6,883,680	4,054,130	2,978,055
August	7,808,150	5,703,820	3,588,860
September	6,599,650	3,581,450	2,,813,125
October	6,847,125	3,740,350	2,659,575
November	5,884,080	2,988,950	3,208,550
December	7,296,900	3,508,075	4,419,325
Total	**64,472152**	**40,994,920**	**42,205,855**

Source: Nairobi National Park Revenue Record, 1999.

The figures above show that Nairobi National Park is a real gem to the national economy. To be borne in mind is the fact that there are other parks in the country that bring in much more revenue than Nairobi Park, for example Nakuru and Amboseli National parks. However, there are many more that generate no revenue at all and have to be supported by the profitable ones. Part of KWS' reason not to channel any revenue to the Kitengela landowners is based on this argument; "what will happen to those parks and reserves that do not generate revenue". The dilemma this brings about is that those Parks that generate profit also run the risk of dying if the people supporting their large herds of wildlife are unhappy.

2.2.3. Benefits to local communities

It is a well-documented fact the most of Kenya's wildlife is to be found outside protected areas (Aligula *et al* 1998; Gichohi 1996; Odegi 1986; Croze 1976 1976; Western 1994). However, existing policy does not favor a smooth flow of wildlife-related benefits to local communities. Despite the fact that wildlife contributes to national income, this is not sufficient *raison d'être* for conservation. To communities that live with wildlife, the extent to which wildlife benefits actually reach them is the main issue.

Although communities shoulder the biggest burden of living with wildlife, most commercial wildlife tourism and utilization opportunities accrue to national or international companies such as Safari firms, tour operators, drug companies or overseas consumers (Wells 1996_a; Leader – Williams 1996). Further, the option and existence values of wildlife will be received by the local community or future generations (Emerton 1999:6). The gravity of the matter lies in the fact that rural landowners living with wildlife are in most cases already marginalized and have to toil to eke out a living from the harsh conditions. It is paradoxical that they are expected to remain paupers as they live day-in day-out with gold – the wildlife.

Examples abound to show that communities gain very little in economic terms, by living with wildlife. In Amboseli area communities living adjacent to the Park earned less than 1% of revenue collected in 1990 (Emerton 1999:6). In Maasai Mara in 1988, tour firms received 45% of the revenue, hotels received 35%, shops 5%, taxes took up 5%, wages 5%, Narok County Council got 5% while the local Maasai received only 1% of the revenue (Emerton 1999:6). Other Researchers have also shown how the high costs are a hindrance to the smooth co-existence between wildlife and pastoralists (Barrow *et al* 1997).

The main problem concerning wildlife on the ground will continue to be the extent to which communities will be willing to live with wildlife on their land. The crux of the problem will inevitably hinge on the costs and the benefits accruing from living with wildlife. The benefits should contribute directly towards the alleviation of poverty in rural areas. The dilemma for Africa will continue to be how to balance conservation and development. Wildlife must contribute materially to the well being of the people who live with it, otherwise it may become a relic of the past (Kock 1996).

2.3. Wildlife Conservation and Demographic pressure

The rate of population growth in the East African region has declined in recent years (UNDP, 1997), but total human population continues to rise. This has been a reflection of general global trends regarding population. Although the human population numbers are increasing in the region, Kenya faces a greater demand for agricultural land mainly because of lower rainfall (Bourn and Blench, 1999:vii).

As a result of population pressure on rangelands, there has been a shift from pastoralism in some areas to Agro-pastoralism (Homewood and Rodgers, 1991). This shift has been characterised by intensification of conflicts, which are likely to increase if rural poverty and dependency on land increases, or through economic stagnation (Zimyana, 1995).

2.3.1. Population trends in Kajiado District and the Dispersal area

The Dispersal area comprises Kitengela and Isinya locations of Isinya Division in Kajiado District. On the average, Kajiado District is sparsely populated with an average population density of 19 people per square kilometre (GOK, 2002). In 1969, the population density in the district

was four persons per km2 whilst in 1979 it was seven persons per km2 (Kajiado Atlas 1990). In 1989 it was 12 people per km2 (ROK, 1989), while in 1999 it was 19 persons per km2 (ROK, 1999). The human population in Kitengela location has more than doubled in the last ten years, from 6,548 in 1989 to 17,347 in 1999 (ROK, 2001), although more than two thirds of the population is concentrated in the Kitengela Shopping centre and other smaller shopping centres.

The Kitengela area has been experiencing a faster growth in population compared to the district's general figures, mainly due to its proximity to Nairobi City. Yet it is the most crucial area since it includes the calving zone for the Wildebeest. Previous wildlife censuses have shown that the highest concentration of wildlife is found there (Gichohi and Sitati 1997; Ataya, 2002; Kristjanson *et al,* 2002).

For wildlife conservation to succeed outside protected areas, the people living with it must play an active role. Active participation in wildlife conservation by communities living with wildlife is a function of how much benefits they receive from their stewardship.

The Kitengela dispersal area faced imminent danger from the ever-increasing influx of immigrants mainly from Central, Eastern and Nairobi provinces. Rapid population increase had led to more settlements, which had in turn brought about more fences, blocking the traditional wildlife routes (Kimani and Pickard, 1998). Besides the fences, there had also been a sudden change in land-use in the area, hence compounding the already intricate situation. Although 73% of the population had been concentrated in the shopping centre, there had been a growing spill over onto the adjacent areas.

2.4. Theoretical Framework

Introduction

This section looks at the theoretical basis for the study and further examines the theories' applicability especially in relation to the issue of Human-wildlife conflict. In addition, contractual possibilities that could bind both the landowners interested in wildlife conservation and the custodians of wildlife are also discussed.

The social exchange theory and the conflict theory have been applied to help analyse the relationship between the landowners and their way of life on the one hand, and the government and their conservation policies on the other.

2.4.1. The Social Exchange Theory

This study will be guided by the Exchange Theory as formulated by Peter Blau especially in arguing for. Blau argues, "An individual who supplies rewarding services to another obligates him. To discharge this obligation, the second must furnish benefits to the first in turn ... if both individuals value what they receive from each other, both are prone to supply more of their own services to provide incentives for the other to increase his supply and to avoid becoming indebted to him." Blau further shows the link between continued reward and the desired actions and how the latter may vanish with the disappearance of the former (Abraham 1982: 155).

The theory further shows that an individual enters into a relationship with an aim of profiting from it. The main argument revolves around the economic rationale of people's actions (Abraham 1982:162). He goes on to argue that there develops a generalized obligation that compels one person to make a return for the benefit received. This is institutionalised as the norm of reciprocity.

The norm of reciprocity makes two minimal demands:

- People should help those who help them, and
- People should not injure those who have helped them (Abraham 1982: 163).

The norm further requires that if others have been fulfilling their status duties to one, then one is also obliged to fulfil their status duties to others. As a result, the sentiment of gratitude joins forces with that of rectitude and adds a safety-margin in the motivation to conformity (Abraham 1982: 164). The theory represents the adaptation of an elementary economic model to social relations. The suggestion is that when people interact, they do so with expectations that they will get at least as much out of the interaction as they put into it (Wallace 1969).

The Wildlife Conservation Lease Programme introduced by the Friends of Nairobi National Park for Kitengela landowners may be hinged on the above theory since the landowners, in return for accommodating wildlife on their land, are paid a certain amount of "reward". The "reward" was spelt out on the lease contract, which clearly stipulated that if the landowner contravened any of the rules so stated, then he/she would not receive the money (FoNNaP Lease contract 2000).

Based on the theory, it is expected that as long as the landowners value the monetary benefits they receive for wildlife stewardship on their land, they will desist to engage in any anti-wildlife activities. The reward they derive from wildlife will help to put in place the norm of reciprocity, hence the protection of wildlife on their land.

2.4.2. The Conflict Theory

According to Inkeles (1999), the basic condition of social life is dissension, mainly arising from the competition for power and advantage between different groups. The conflict arising as a result of the competition brings about change, both in ideas and in consciousness (Abraham, 1992). Conflict theorists are interested therefore in knowing who gets the bigger share of the benefits that accrue from any social or economic endeavour (Zanden1988). The distribution of these desirables is determined by the structure of society or the institutions therein. The main issues evoking conflict evolve from the quest for power, wealth and prestige (Abraham, 1992).

In Kenya, the government through the Kenya Wildlife Service (official custodians of wildlife) is the *de jure* owner of wildlife. However, the biggest percentage of wildlife is found outside protected areas. Over the years, a tussle has developed between these two owners of wildlife. The landowners argue that they are the *de facto* owners of wildlife since they bear the larger cost of living with it.

The main bone of contention is that the distribution of the desirables accruing from wildlife is controlled by one party-the government, hence the conflict. Mwangi and Warinda (1999) found out that the majority of landowners in Kitengela were unhappy with the government mainly due to two reasons: the mitigation of costs and conflict arising from living with wildlife and the distribution of the revenues attracted by wildlife.

The government has enacted laws that protect its interest in both the ownership and distribution of wildlife-related revenue. That has created animosity between the government and the communities living with wildlife. The latter's argument is that the former was out to create

permanence to the laws that protected mainly its interest thereby alienating the true owners of the "goose that lays the golden egg." The struggle that has ensued over the years could be likened to what Karl Marx described as pressure that "forces the producer of wealth to become estranged to the product of his labour" (Zanden, 1988). Past studies have also shown that most communities living with wildlife in Kenya had negative attitudes toward the resource mainly because they viewed it as serving the interests of "someone else". Such a scenario is analogous to what Marx saw as being the exploitation of the masses by the elite in power, a view also shared by Lewis Coser and Ralf Dahrendorf (Turner, 1978). Dahrendorf further argues that the deprived members of such a system may begin to question the legitimacy of the authorities with regard to the distribution of resources, hence the conflict (Turner, 1978). Such conflict, he further argues, comes about especially after the concerned people get emotionally aroused. Such an arousal brings about a shift from either apathy or resignation (Turner, 1978).

In the Kitengela area, many incidents have been witnessed in the recent past where landowners have clashed with the Kenya Wildlife Service after emotionally charged landowners killed several lions which had killed their livestock (FoNNaP, 2002; Parker, 2003; Mbaria, 2003; Njaga, 2003; Njumbi, 2003; Sifuna, 2003; Nesoba, 2003; East African Standard, Wednesday June, 25th 2003; Kahura, 2003). Besides, some landowners have in the past also colluded with poachers to kill wildlife and trade in game meat. Most of those engaging in such activities were either outsiders or semi-pastoralists who saw wildlife as a liability on their land. The crux of the conflict is not the wildlife *per se* but the structures put in place by the government in regard to the distribution of wildlife-related benefits. This is what Coser would describe as realistic conflict because it emanates from specific demands as opposed to non-realistic conflict which is aimed at

the release of tension (Abraham, 1992). The conflict in Kitengela is therefore realistic conflict, directed to the source of the frustration-the government.

Effective conflict resolution in the dispersal area can therefore be achieved by addressing the root cause of the problem i.e. the distribution of benefits and by extension the mitigation of costs arising from harbouring wildlife on private land. Otherwise the maintenance of the *status quo* will only ensure that the landowners get more estranged towards the wildlife, and hence its subsequent annihilation outside protected areas.

2.5. Research Questions

a. Does the land size as held by the landowner influence his/her acceptance to join the wildlife conservation Lease program?

b. Is the location of one's land in relation to proximity to the Park, the tarmac road or a shopping centre a facilitating or impeding factor for one to join the lease program?

c. To what extend does the cultural background of the Maasai pastoralists enhance or jeopardize the tolerance to wildlife on their land?

d. To what extend do landowners' income influence their acceptance or rejection of the wildlife conservation lease program?

e. Has the wildlife conservation Lease program been able to change the attitudes of the landowners towards wildlife in the area (for those who have joined)?

2.6. Operationalization of factors of study

i. **Relevant personal characteristics, which include**

- **Age of the respondents**: This is the number of years lived by the respondent up to the time of the interview.

- **Level of education**: This referred to the number of years completed in formal education.
- **Sex of the respondent**: This referred to being either male or female.
- **Marital status:** This referred to the marital condition of the respondent, whether married, divorced, widowed or single.
- **Number of dependants:** This referred to the number of children who were directly dependent on the respondent by the time of the interview.

ii. **Land size**: This meant the size of land in terms of acres duly owned by the respondent.

iii. **Proximity to the National Park, shopping centre or tarmac road**: This was the estimated distance in terms of kilometres from either the Namanga road or the Isinya-Kiserian Road, whichever was closer. Also, the distance from Nairobi National Park, and the nearby shopping centre, estimated in kilometres.

iv. **Landowners' economic status**: This referred to the number of cattle that a landowner owns, the number of shoats and the size of his/her land.

v. **Attitudes**: These refer to a person's disposition to or evaluations of objects or situations and may be either positive or negative.

vi. (vi) **Wildlife Conservation Lease Programme:**

This referred to the arrangement whereby an agreement was entered between the local landowners and The Wildlife Foundation (a locally registered NGO) so that the landowners agreed to a number of terms, which were wildlife conservation friendly and committed to ensure free movement of wildlife. In return, they were paid KSh.300/- per acre/year while they continued grazing on the same land.

3 CHAPTER THREE

3.1. Study Design and Methodology

Introduction

In this section, the study design, variable selection methods, sampling procedure and data analysis procedures will be discussed. Some quantitative and mainly qualitative methods of data analysis were used to analyze the data.

3.1.1. The Study Design

This study is designed as a quasi-experimental one. There is an intervention group as well as a control group. An interview schedule was used to get views from those on the Lease program as well those not on it mainly to assess their attitudes towards wildlife on their land.

3.1.2. The Intervention Group

The landowners on the Lease Program are treated as the intervention group. They joined the lease program starting from the year 2000. A total of 52 respondents were randomly selected to represent this group.

Prior to the initiation of the Lease Program, attitudes towards wildlife conservation were measured in the same area (Mwangi and Warinda, 1999). The same questions or statements are repeated in this study so as to try and capture any change in attitude since the introduction of the intervention (the Lease Program).

3.1.3. The Control Group

On the other hand, a second group of 52 were also randomly selected in the same area (see appendix II). The same questions asked in the ACC study (Mwangi and Warinda, 1999) are posed to these two (the control and intervention) groups.

The assumption behind this design was that respondents on each side would show a difference in attitude while responding to the same question. The difference would be attributed to a greater extent to either being on the Lease program (the intervention group) or not. The different responses would also be compared and with those in the ACC study of 1999 to see if there were attitudinal differences.

3.1.4. Data Collection Methods

The data collection involved both primary and secondary methods. The primary method included the administration of an interview schedule, which was used to collect household-related information from the sampled respondents.

Five Enumerators were identified to administer the interview schedule. Four of the five were highly experienced as a result of their participation in both the ACC (Mwangi and Warinda, 1999) baseline survey and thereafter the ILRI (Kristjanson *et al*, 2002) study both of which form the background of this study. Each of the enumerators was assigned a specific geographical area (a sub-location) and each administered a total of 20 interview schedules. The principal investigator did not carry out direct interviews due to the risk of introducing a bias. He had been working with the Lease program as the implementer on the ground. His direct involvement as an interviewer was likely to influence the kind of answers given by the landowners all of whom knew him well, and his views on wildlife conservation.

The ACC (African Conservation Center) baseline survey measured landowners' attitudes towards wildlife on their land by using the Likert scale. The same set of statements and few more were replicated in this study to assess the impact of the Lease program as an intervention measure, which was started in the year 2000.

Secondary sources of data included maps, published and unpublished documents and articles.

3.2. Sampling Techniques

A random sample of one hundred respondents out of approximately 600 landowners was picked. The respondents were scattered all over the study area and no deliberate attempt was made to even their distribution or characteristics. The respondents were in two main groups distinguished mainly by the fact that one group (the intervention group) was on the lease Program while the second group (the control group) was not on the Lease program but they resided in the same area i.e within the first Kitengela triangle (see Figure 4.1). The study was designed like a quasi-experimental one so as to assess the impact of the Wildlife Conservation lease program as an intervention method aimed at improving community-based wildlife conservation. Generally, all other relevant variables were similar across the 100 respondents. Details of the sampling procedure used are as follows:

3.2.1. Participating landowners

A random sample (using random numbers) was used to pick fifty-two landowners out of 80 landowners who were at least a year old on the lease program. These landowners were resident in the five sub-locations, which are nearest to the Nairobi national Park. The same area was focused on in both the ACC survey (Mwangi and Warinda, 1999) and the ILRI study (Kristjanson *et al*,

2002). The decision to focus on the same area was mainly to ensure that as far as possible, the respondents in the sample were as comparable as possible to those of the previous studies (Kristjanson *et al*, 2002 and Mwangi and Warinda, 999). Also, that was the area that experienced the highest intensity of wildlife conflict due to its proximity to Nairobi National Park.

3.2.2. Non-participating landowners

Out of the larger sample frame, another fifty landowners were targeted. Forty-eight respondents were finally picked from this group. These respondents represented the control group as opposed to those on the lease program who formed the intervention group. Together with those in the intervention group, the respondents became one hundred out of a total sample frame of 600 landowners. This group was expected to manifest similar attitudes towards wildlife as those in the ACC survey, and different from those of the intervention group whose members were beneficiaries of income from the Lease program (see appendix II).

3.2.3. Data Analysis Procedure

Data was analyzed using the SPSS (Statistical Package for Social Sciences) program for Windows. Descriptive statistics as well as some correlations between variables were analyzed. The chi-square and the independent samples *t*-test were used to measure association and variance between the two samples and some variables.

The Likert scale was employed to help gauge the respondents' attitudes towards wildlife on their land. The main analysis was qualitative in nature. The scale was based on a five-point scale that ranged from 1-5 as shown below:

Table 3.1. Likert scale for attitude rating

Response	**Rating**
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly disagree	5

The above weighting scale was used by ACC (African Conservation Centre) in 1999 (Mwangi and Warinda, 1999) to measure the attitudes of the sampled respondents in the Kitengela area. In this study, the same weighting scale was preferred so as to enhance comparability.

4 CHAPTER FOUR

4.1. Data Analysis and Discussion

Introduction

This section discusses the respondents' personal details, which are also the factors of study. These factors of study include age, sex, marital status, years of formal education, number of dependants, their main occupation, the distance from the tarmac road, shopping centre and the Nairobi National Park. The size of their land is also discussed.

4.2. Factors of study in relation to the Intervention and Control groups

The group statistics below are a summary of the similarities or differences between the *control* group (those not on the Lease program) *versus* the *intervention* group (those on the Lease program). The other variables (main occupation, and the distance to the tarmac road, shopping centre and the Park) are also discussed.

The two samples were generally similar except for the fact that one group (the intervention Group) was on the Lease program while the second (the control Group) was not on the Lease Program. The means for these variables show very little variation if any and may attest to the fact that the two samples were randomly selected.

Table 4.1. Comparison of selected factors of study: The control *versus* intervention groups

	Whether on the Lease Program	N	Mean	Std. Deviation	Std. Error Mean
Age or respondents	No	48	45.31	16.102	2.324
	Yes	**52**	**48.27**	**13.013**	**1.805**
Level of education	No	48	5.36	5.454	.787
	Yes	**52**	**5.56**	**6.040**	**.838**
Children below School age	No	48	.9792	1.17581	.16971
	Yes	**52**	**.9615**	**1.26741**	**.17576**
Children in primary	No	48	3.1875	2.80316	.40460
	Yes	**52**	**3.5192**	**2.43738**	**.33800**
Children in secondary	No	48	.5208	1.03121	.14884
	Yes	**52**	**1.2115**	**1.28851**	**.17868**
Dependants in College/University	No	48	.1250	.39275	.05669
	Yes	**52**	**.3462**	**.59027**	**.08186**
Unemployed and Staying at home	No	48	1.0417	1.50118	.21668
	Yes	**52**	**1.4615**	**1.32045**	**.18311**
Dependant living Elsewhere	No	48	.3125	.71923	.10381
	Yes	**52**	**.6154**	**1.62280**	**.22504**
Land size	No	48	113.57	114.39987	16.51220
	Yes	**50**	**186.79**	**205.15549**	**29.01337**

Source: Survey Data and SPSS analysis

The two samples were found to be significantly different under the ' children in secondary school', 'dependants in colleges/universities' *(p=.028, 98 df t=2.944; p=.000,98 df t=2.187,*

respectively). However the Lease program may not necessarily be the main source of difference if its short duration is taken into account.

4.2.1. Age and location of Respondents

The survey sampled out 100 respondents in the study area of which 84 (84%) were from the Isinya division of Kajiado District while 16 (16%) were from the Empakasi sub-location of Machakos District. The total sub-locations covered were five. These were: Kitengela (Olooloitikoshi), Sholinke, Oloosirkon all of Kitengela Location, Kisaju sub-location of Olturoto Location and Empakasi sub-location of Athi-River Location.

The average age of the 100 respondents was 47 years and ranged between 17 years to 87 years. The age mean and range compared well with those of the previous surveys (the 1999 ACC survey and the ILRI 2002 study). The ACC survey had respondents with an average age of 44 years and a range of between 20 to 80 years while those of the ILRI study had an average of 40years with a range of between 20 and 70 years. The table below summarizes the respondents' ages by sub-location.

Table 4.2. Respondents' Age by sub-location

Sub location	Number of respondents	Minimum years	Maximum years	Mean No. of years
Sholinke	18	17	75	45
Empakasi	16	29	59	43
Kitengela	26	33	87	52
Oloosirkon	22	26	84	46
Kisaju	18	28	61	44
Total	**100**	**17**	**87**	**47**

Source: Survey Data

As the table below shows, the main segment of the respondents (47%) were between the age of 33-48 years. A further scrutiny shows that generally, the majority of respondents fell between the ages of 33 to 64 years as the table below illustrates. The smallest segments of the respondents were those below 32 and above 81 years who represented 14% and 2% respectively.

Table 4.3. Respondents' age distribution by category and %

Age category	Frequency	%	Cumulative %
17-32	14	14	14
33-48	47	47	61
49-64	25	25	86
65-80	12	12	98
81+	2	2	100
Total	100	100	

Source: Survey Data

4.2.2. Respondents' sex by sub-location

Most of the respondents (77%) were male while the rest (23%) were female. The main reason for this imbalance was that the majority of the household heads (the unit of analysis) were men. In the ACC survey (n=171), 85% of the respondents were male while the rest (15%) were female. The respondents were spread over the five sub-locations as shown on the table below.

Table 4.4. Respondents' sex by sub-location

Gender/sub location	Sholinke	Empakasi	Kitengela	Oloosirkon	Kisaju
Male	15	14	19	18	11
Female	3	2	7	4	7
Total (%)	**18**	**16**	**26**	**22**	**18**

Source: survey data

4.2.3. Marital Status

The majority of the respondents (82%) were married. Only one was single. 17% were widows. The high number of widows may be attributable to three main reasons: The first was the fact that although polygamy was currently less practiced in the area, it had been a common practice in the area for a long time. Within a polygamous family set up, a man could marry between two and four (and sometimes more) wives. If by any chance the husband died, the women would all become widows.

The second reason had to do with the typical age differences between the husbands and the wives. Most times the man was much older than the wife and so he almost always died first and left behind a widow or widows.

The third reason may be attributed to the deaths associated with the Acquired Immune Deficiency Syndrome (AIDS) whose impact had started to be felt in the community. The general experience in the area was that men were dying faster than the women (leaving behind many women, most

of them still within the child bearing age bracket). Such women would also spread the disease to other men and women. The table below gives a summary of the categories.

Table 4.5. Marital Status of Respondents

Marital Status	Frequency	%	Cumulative%
Married	82	82	82
Single	1	1	83
Widows	17	17	100
Total	100	100	

Source : survey data

4.2.4. Respondents' years of formal education

The average number of years of formal education was 5.5 (n=100). Those who had no formal education at all constituted 42 % .The figure compared well with the same segment in the ACC survey where 37.3 % of the respondents (n=171) had no formal education (Mwangi and Warinda, 1999). In this study, 10 % had over 12 years of formal education, and the proportion was similar to that in the ACC survey where13.9 % fell within the same category. In the ILRI study 24 % of the respondents had no formal education (n=35) while 29 % had over 11years of formal education (Kristjanson *et al*, 2002). In this study, the range was between 0-23 years of formal education. The table below gives a summary. Formal education or the lack of it has been shown to significantly influence the levels of poverty in households (GOK, 1997 p.iv).

Table 4.6. Years of formal education

Level	Years of education	Frequency	%	Cumulative %
None	0	42	42	42
Primary	1-8	31	31	73
Secondary	9-12	16	16	89
Tertiary	Over12	11	11	100
	Total	100	100	

Source: survey data

The table below further shows that the two samples (the control *versus* the intervention group) had similar characteristics regarding formal education levels, i.e. there was no

Table 4.7 Cross tabulation: Lease Program membership *versus* level of formal education

Whether on the Lease Program			Frequency	Percent	Valid Percent	Cumulative Percent
No	Valid	No education	20	41.7	41.7	41.7
		Primary education	15	31.3	31.3	72.9
		Secondary education	9	18.8	18.8	91.7
		Tertiary education	4	8.3	8.3	100.0
		Total	48	100.0	100.0	
Yes	Valid	No education	22	42.3	42.3	42.3
		Primary education	16	30.8	30.8	73.1
		Secondary education	7	13.5	13.5	86.5
		Tertiary education	7	13.5	13.5	100.0
		Total	52	100.0	100.0	

Source: Survey data and SPSS analysis

4.2.5. Number of Dependants per household head

In this study, the average number of dependants was 7.2. It was assumed that younger people who had attained higher education levels would have smaller families. The number of dependants

in a family may be an influencing factor in making decisions especially of an economic nature. Pressure from economic needs especially in large families could easily push a household head to take a number of decisions that may impact either positively or negatively on among other things: land sales, joining or not joining the Lease Program, selling more or less livestock, engaging more or less in cultivation, (hence fencing more land) and even eating game meat). With more mouths to feed, landowners may continuously be tempted to try out new ways of meeting their needs.

In Kitengela, it has been noticed that the average household size is smaller than those in some other pastoralist areas for example Mbirikani in Southeastern Kajiado. The Mbirikani area had an average family size of 9.4 persons (Mwangi and Warinda, 1999) as opposed to Kitengela's 8.2 (Mwangi and Warinda, 1998; Ibid, 1999) respectively. Both areas had larger numbers of household members than the district average that stood at 4.2 people (GOK, 2002: p. 9). The district figure should be interpreted with some caution due to the inclusion of urban households that were likely to be characterized by nucleus families as opposed to the extended families ubiquitous in the Maasai rural areas. Although the Kitengela household size may be smaller than those of other pastoralist areas, it may be more difficult to make ends meet in the Kitengela area than in the others. The pressure from the predominant cash economy in the Kitengela area could be one of the biggest push for land sales within the area. Whereas other pastoralist areas may experience a less complex lifestyle, the Kitengela area has become a blend of both the urban and the rural. The spillover effect from the city influences the economic lifestyle of the people especially in spending their money. Large households would therefore have greater demands that would translate into more pressure to source income from traditional and non - traditional sources. Moreover, the high demand for formal education and its associated costs in the

Kitengela area (almost all the children were sent to school) was likely to be another push factor for cash demand.

The findings of this study revealed that 47% of the dependants were children in Primary school while 12.2% were in secondary school. 18% were dependants at home, (6.5% dependants elsewhere). 3.3% of them were in college and 13% were children below school going age.

The dependants in college, in secondary school and those at home may be an indicator of the kind of pressure that the different household heads experienced in trying to provide the necessary daily requirements. The dependants living elsewhere include sons or daughters or other relatives being supported in some way by the respondent.

Table 4.8. Number of dependants by category

Dependants	Number of dependents	%	Mean
Children below school age	97	13	.97
Children in primary	336	47	3.36
Children in secondary	88	12.2	.88
Dependant in college	24	3.3	.24
Dependant at home	126	18	1.26
Dependant elsewhere	47	6.5	.47
Total	718	100	7.18

Source: Survey data

4.2.6. Dependants' educational status

Apart from the educational background of the respondents, this study also tried to capture the educational levels of the respondents' children within the school going age bracket. Education or

lack of it can be a major source of influence as far as decision-making is concerned. Yet for many years the Maasai have been considered to be reluctant to send their children to school (Holland, 1996; King, 1972). The Kitengela area has had a lot of influence mainly from the cosmopolitan towns adjacent to it. These include mainly the Nairobi City and the towns of Athi-River, Kitengela and Ong'ata Ronkai. Low literacy levels have been reported elsewhere across both Narok and Kajiado Districts (Holland, 1996; Rutten, 1990, Nkedianye, 1998) as well as in other pastoralist districts. However, the Kitengela area could be better off in education than many other areas as attested by Mwangi and Warinda, 1999; GOK, 2002).

The table below shows that a considerable number of children were going to school with Kitengela sub-location sending a proportionately higher number of them especially in primary school. Notable also is the fact that Sholinke sub-location had the smallest number of children in both primary and secondary schools. The two sub-locations have different characteristics that would to a certain extent explain the disparity in enrollment especially in secondary school. The Sholinke area is geographically remote. Young children in the area for a long time found it difficult to get to school mainly because of the distances to be covered. On the other hand, Kitengela sub-location is closer to the tarmac and the shopping centre and has better accessibility to schools.

Table 4.9. Dependants' educational status by sub-location

Sub location	No of respondents	Children below school age	Children in primary	Children in secondary
Sholinke	18	19	42	3
Empakasi	16	13	42	9
Kitengela	26	34	107	35
Oloosirkon	22	21	74	17
Kisaju	18	10	71	24
Total	100	97	336	88

Source: Survey Data

4.2.7. Respondents' occupational structure

The table below shows that most of the respondents considered themselves to be either pastoralists (10%) or semi-pastoralist farmers (48%). That means that combined, the figures added up to more than half of the people keeping livestock as their most important source of income. Those who engaged in business formed the next most important segment (24%). Crop farmers were only 2% while the rest of the respondents were scattered across various trades and professions. The findings of this study are comparable to those of ACC (Mwangi and Warinda, 1999) where semi-pastoralism was the main occupation for 46% of the respondents.

Kristjanson *et al,* (2002) found that there was a significant amount of income from off-farm income within the Kitengela dispersal area. In this study, at least 15% of the respondents were employed elsewhere and therefore depended on more or less on off-farm in come. However, it is important to note that even for those whose main source of income was different from keeping of livestock, income from livestock keeping contributed significantly to their overall income.

Essentially, the important observation was that the majority of the landowners in the dispersal area were semi-pastoralist who needed space for their livestock. For wildlife to survive outside protected areas, there had to be a supportive or compatible land use like free range movement of livestock. Most of their spouses also did the same work as their husbands while all the widows were also semi-pastoralists. All of them engaged in selling milk, which was an important source of income for those who kept cattle in the area (Kristjanson *et al*, 2002).

Table 4.10. Respondents' occupational structure

Occupation	**Frequency**	**%**	**Cumulative %**
Pastoralists	10	10	10
Semi-Pastoralist Farmer	48	48	58
Trader and Semi-Pastoralist	24	24	82
Crop Farmer	2	2	84
Other*	16	16	100
Total	100	100	

Source: Survey data

* Other: This includes teachers (2), contractor, watchman and an assortment of others (1 each) mainly earning off-farm income.

4.2.8. Land ownership and location in the dispersal area

All the respondents owned land in the Kitengela wildlife dispersal area. The average amount of land owned ranged from 4 acres to 1,216 acres with an average of 150 acres. These figures compare well with those of the ACC survey (Mwangi and Warinda, 1999) where the minimum, average and maximum land sizes were found to be 2 acres, 154 acres and 1,316 acres, respectively. In the ILRI study (Kristjanson *et al*, 2002) the minimum, average and maximum land sizes were 2 acres, 156 acres and 1,316 acres, respectively. It was also revealed that 28% of

the respondents owned land elsewhere. The likely explanation for the extra parcels of land is that some people had several homes during Group Ranch times and when sub-division began, it was difficult to deny them land in those areas after having lived there for a long time. The other explanation could be that some of them had relatives in different Group Ranches from whom they inherited the land.

The average size of land varied because of a number of reasons. The Empakasi area residents got the smallest parcels of land during the sub-division of Group Ranches. Further, they were also among those who had sold the highest percentage of their land. In the Kitengela sub-location, there were a number of land parcels that were not part of the Group Ranch area. These parcels had been alienated earlier and averaged about two thousand acres. They partly explain why the average land holding in that sub-location is higher. The same applies to Oloosirkon sub-location. The Kisaju area was formally a Group Ranch but the sub-division was seen as one of the fairest: all the members got an equal share of land (about 300 acres). That figure was about twice the size of land allocated to landowners in the Empakasi sub-location. The Sholinke sub-location was part of larger Kitengela Group Ranch and the members got different sizes of land. The Kitengela Group Ranch comprised what is currently Sholinke, Kitengela and Oloosirkon sub-locations and was known to have been one of the most unfairly sub-divided Group ranches in Kajiado district hence the variations in land sizes.

Table 4.11. Size of land owned (in acres)

Sub-location	Minimum owned	Maximum owned	Mean acreage
Sholinke	10	303	103
Empakasi	5	157	57.5
Kitengela	10	1,216	252.4
Oloosirkon	4	450	152.4
Kisaju	30	350	139
Total	4	1,216	150

Source: Survey data

4.2.9. Prices of Land

The table below shows the differences that exist in land prices. The demand for land next to the tarmac (especially in Kisaju area bestriding the Namanga road) had pushed the land prices up. Most people from outside would want to buy small pieces of land not far from the tarmac. The higher land prices in both Empakasi and Oloosirkon sub-locations can be attributed mainly to the demand created by outsiders who would want to have a good view of the Nairobi Park. However, the prices have fallen since the mid 1990s when some landowners sold their land for as high as KSh..600,000/-. Since then no one has been known to sell land at an amount exceeding KSh..400,000/- per acre. The landowners living along the river still nurse the hopes of selling their land at those high prices and the prices quoted are more of those that were at one time prevalent rather than what was the reality at the time of the interview.

The Sholinke area and some parts of Kitengela had the lowest prices. The main reason may also be attributed to their remoteness especially away from the tarmac and the Park. The minimum prices given for the five sub-locations were those of areas farthest from the tarmac, the Park and the shopping centres. In the ACC survey (1999), the average price of per acre was KSh.57,813/-

while in this study the same had gone up to KSh..88,400/-. Figures in the ACC survey indicated that the range of land prices was KSh.30,000-800,000/- per acre. In this study, the range fell between KSh.50,000-600,000/- per acre of land. Prices would have appreciated much faster within the period had the Kenyan economy grown. On the contrary, the economy had stagnated for a long time if not grown negatively. In the ACC survey, it was revealed that there was a significant relationship between distance from the tarmac roads, the National Park, shopping centers and the price of land. The same was found to be still the case in this study. Overall, the highest land prices in 1999 had dropped considerably (from about KSh.800,000/- down to KSh.400,000/- while the lowest prices then had gradually appreciated (from KSh.30,000/- up to KSh.50,000/-) at the time of this study.

Table 4.12. Prices of land (in KShs) by sub-location

Sub location	Mean price	Maximum price	Minimum price
Sholinke	105,000	200,000	50,000
Empakasi	191,875	600,000	65,000
Kitengela	157,308	400,000	60,000
Oloosirkon	308,181	600,000	60,000
Kisaju	167,222	400,000	100,000
Total	188,400	600,000	50,00

Source: Survey data.

4.2.10. Plan to sell Land (in the next 2 to 5 years

Of the one hundred respondents, 33% of them said they planned to sell land within the next two years. The vast majority (67%) were not planning to sell land within the same period. Since the sub-division of the Group Ranches in the mid –eighties, land sale had been an important source of income for the local landowners. Many had sold large chunks of their land hoping to get rich

quickly. However, almost all of them ended up doing very badly (Rutten, 1990). The issue of sale of land was important in the area especially because the greatest contributor to the closing up of the dispersal area was the ever increasing fences which came with the sale of land mainly to outsiders. These outsiders were not interested in open grasslands. They wanted to fence off the land and perhaps sell it later on. The average amount of land earmarked for sale was 22 acres.

Gichohi (1996) noted the role of cash from sales of land. Some landowners used the money to fence off large tracks of their land and in constructing tin houses (Rutten, 1990; Mwangi and Warinda, 1999).

However the overall trend was that the rate of land sales had slackened mainly due to the state of the economy. In addition, there was disillusionment among the landowners as a result of the poor performance of those who rushed to sell land, most of who ended up poorer. The third reason may be attributed to the skirmishes that were experienced during the 1992 general elections when many people who had bought land in the area were harassed.

4.2.11. Distance from Nairobi National Park

The one hundred respondents were sampled from the first triangle of the Kitengela area. This is the area closest to the Park. It was the same area of study by Mwangi and Warinda in 1999 (see map below). It comprised four sub-locations namely: Empakasi, Oloosirkon (both nearest to the Park), Kitengela, Kisaju (both nearer to the Namanga Road) and Sholinke (far from the Park, the Kitengela shopping centre and the Namanga road, but closer to the Kiserian-Isinya Road). The same area was studied in the ACC survey and the ILRI study. This area also experienced the greatest intensity of human-wildlife conflict due to its proximity to the Nairobi National Park.

Further, this it was targeted because the Wildlife Conservation Lease Program for Nairobi National Park was being piloted there.

Within the area of study however, there are also variations regarding distances. One of the main assumptions of this study was that those people whose land was closest to the Park, the shopping centres and the tarmac roads would be less likely to join and remain on the lease program, because they faced the greatest temptation to sell their land due to the better (higher) prices offered by the buyers. The high price of land located in these areas was therefore viewed as a potential disincentive to join the lease program. Mwangi and Warinda (1999) found out that land prices were correlated to the distances from the Park, the tarmac road and the shopping centers. One of the objectives of this study was to measure the extent to which that assumption could be true.

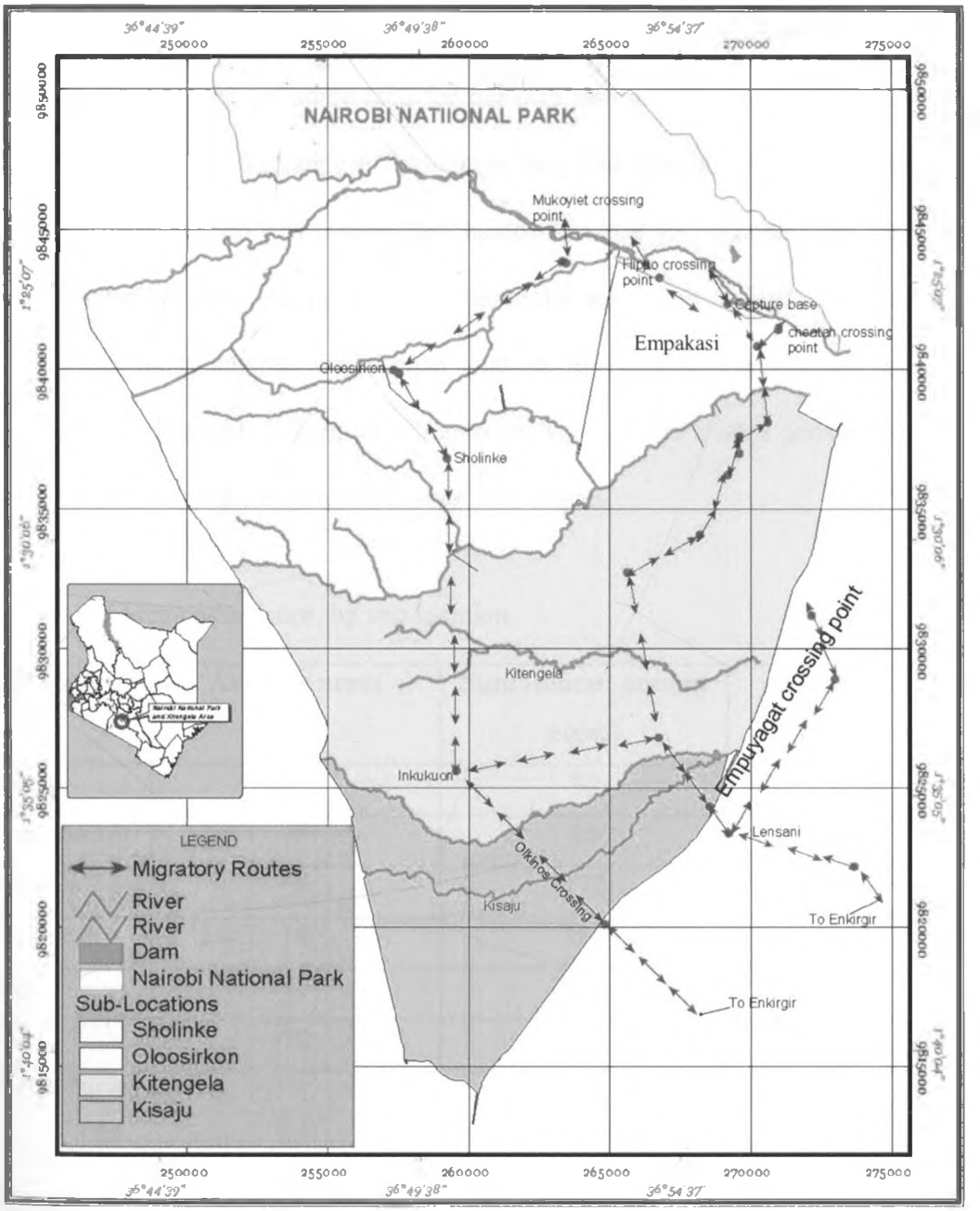
As shown in the table below, 58% of the respondents lived within a distance of ten kilometers from the Park boundary. The rest lived between 11 and 25 kilometres from the Park. Of all the respondents only about 8% lived within a range of one kilometer from the Park boundary. This segment was important because it was likely to be the one enjoying the highest land prices due mainly to its proximity to the Park, while also experiencing the greatest disturbance from the Park's predators (Mwangi and Warinda, 1999).

Table 4.13. Distance from Nairobi National Park

Distance (Km)	Frequency	%	Cumulative%
<1	8	8	8
1 -5	23	23	31
6 -10	27	27	58
11-15	12	12	70
16 -20	18	18	88
21 -25	12	12	100
Total	100	100	

Source: Survey data

Figure 4.1. Map of Study area and Wildebeest migratory routes, October 2002



Map: Courtesy of KWS GIS Dpt

4.2.12. Fenced areas

Although the table shows that some sub-locations may have larger areas of fenced land, the figures should be interpreted cautiously because of the size of the sample. However, except for those who had fenced off some land for pastures that acted as strategic reserves, and outsiders who were interested in fencing off whatever they had bought, the rest fenced only small areas where subsistence food was grown. Few landowners had also fenced fairly large areas and were always grappling with the problems of perennial repairs as wildlife repeatedly destroyed the fences. The most notable were those next to the tarmac roads where wildlife (especially wildebeest) had passed through for a long time. The wildlife always persisted on passing through the same area, often destroying the barbed wire fences.

Table 4.14. Area under fence, by sub-location

Sub location	Average acres	Sum (fenced area in acres)	Maximum area under fence
Sholinke	13	40	20
Empakasi	3	26	8
Kitengela	9	172	72
Oloosirkon	16	113	50
Kisaju	20	62	50
Total	10	413	72

Source: Survey data

The table below shows that there was no significant relationship between being on the Lease program and the amount of fenced land ($\chi 2$=.087,1 df).

Table 4.15. Cross tabulation: Membership on the Lease program *versus* plan to fence in future.

Have you fenced any land? * Wildlife Conservation Lease Programme Crosstabulation

			Wildlife Conservation Lease Programme		
			No	Yes	Total
Have you fenced any land?	No	Count	30	31	61
		% within Have you fenced any land?	49.2%	50.8%	100.0%
		% within Wildlife Conservation Lease Programme	62.5%	59.6%	61.0%
		% of Total	30.0%	31.0%	61.0%
	Yes	Count	18	21	39
		% within Have you fenced any land?	46.2%	53.8%	100.0%
		% within Wildlife Conservation Lease Programme	37.5%	40.4%	39.0%
		% of Total	18.0%	21.0%	39.0%
Total		Count	48	52	100
		% within Have you fenced any land?	48.0%	52.0%	100.0%
		% within Wildlife Conservation Lease Programme	100.0%	100.0%	100.0%
		% of Total	48.0%	52.0%	100.0%

Source: Survey data and SPSS analysis

4.2.13. Plan to fence land in future

The table below shows that there was no significant relationship between those who were either on the lease program or not, and their likelihood to fence more land in future. The cross tabulation below indicates that there was hardly any difference between those who had fenced and those who had not. However, it should be noted that the lease program had started only three years ago and so its effects may not have been significantly felt. Many people may have joined the program after having fenced some parts of their land (mainly to protect small cultivated

parcels of land). The program would therefore need more time for expansion and trust building for better conclusions to be made.

Table 4.16. Cross tabulation: Being on the Lease program versus plan to fence in future

Planning to sell land in the next 2yrs * Wildlife Conservation Lease Programme Crosstabulation

			Wildlife Conservation Lease Programme		
			No	Yes	Total
Planning to sell land in the next 2yrs	No	Count	29	37	66
		% within Planning to sell land in the next 2yrs	43.9%	56.1%	100.0%
		% within Wildlife Conservation Lease Programme	60.4%	71.2%	66.0%
		% of Total	29.0%	37.0%	66.0%
	Yes	Count	19	15	34
		% within Planning to sell land in the next 2yrs	55.9%	44.1%	100.0%
		% within Wildlife Conservation Lease Programme	39.6%	28.8%	34.0%
		% of Total	19.0%	15.0%	34.0%
Total		Count	48	52	100
		% within Planning to sell land in the next 2yrs	48.0%	52.0%	100.0%
		% within Wildlife Conservation Lease Programme	100.0%	100.0%	100.0%
		% of Total	48.0%	52.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.282[b]	1	.257		
Continuity Correction[a]	.848	1	.357		
Likelihood Ratio	1.284	1	.257		
Fisher's Exact Test				.295	.179
Linear-by-Linear Association	1.270	1	.260		
N of Valid Cases	100				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.32.

The relationship is not significant. See also appendix III

4.2.14. Distance from the tarmac road *versus* price of land

The different sub-locations' proximity to the tarmac road varied a lot. Kisaju sub-location was closest to the tarmac and the prices of land in Kisaju were mainly influenced by the area's proximity to the tarmac road. The same applied to the Kitengela area part of which was contiguous to the Namanga Road.

The Sholinke area was neither close to the Nairobi Park nor to the shopping centres (especially Kitengela Shopping centre). Consequently, the prices in the area were the lowest. Although Oloosirkon sub-location was farthest from the Namanga road tarmac, the prices of land in the area were mainly pushed up by the area's proximity to the Park. High demand for the land overlooking the Nairobi National Park (mainly by the well-off people of European origin) had pushed the prices quite high.

The average distance from the road 9.05 km (maximum 20 kilometres) while the average distance from Nairobi National Park was 12.2 km (maximum 22 kilometres). The average distance from

the shopping centres (Kitengela, Isinya and Inkukuon) was 11.96 kilometres. The table further indicates that the land closest to the tarmac road and the National Park fetched the highest prices.

Table 4.17. Distance from tarmac and price of land per sub-location

Sub location		**Distance to tarmac road**	**Price of one acre in KSh**	**Maximum price/acre**
Sholinke	Mean	12.11	105,000	200,000
Empakasi	Mean	9.5	191,875	600,000
Kitengela	Mean	7.4	157,308	400,000
Oloosirkon	Mean	14.4	308,181	600,000
Kisaju	Mean	1.4	167,222	400,000
Total	Mean	9	188,400	600,000

Source: Survey data

Table 4.18. Cross tabulation: Summary of distances from tarmac road, National Park and Shopping centre versus membership on the Lease program.

Group Statistics

	Wildlife Conservation Lease Programme	N	Mean	Std. Deviation	Std. Error Mean
Distance from tarmac road	No	48	9.6375	5.04544	.72825
	Yes	52	8.5115	5.58723	.77481
Distance from Nairobi National Park	No	48	10.07	8.59242	1.24021
	Yes	52	14.16	9.80682	1.35996
Distance from shoping centre	No	48	11.60	3.92341	.56630
	Yes	51	12.30	4.33945	.60764

Source: SPSS analysis

4.3. Number of cattle by sub location in the years 2000 and 2003

Residents of the Kitengela area contend that the drought experienced in the year 2000 was among the worst they ever experienced. Their judgment may be subjective but judging by the number of cattle lost during the drought, the severity may be appreciated. Before the drought, the total number of cattle belonging to the sampled (100 households) was 7026. At the end of the drought, there were a total of 2350 head of cattle. That represents a 66.5% decline in cattle numbers. These figures compare well with the 54% loss estimated for the whole District of Kajiado (GOK, 2002,p.36). By the time of data collection for this study (April 2003) cattle numbers had started building up again. The table below shows that cattle numbers had improved to 3,390 within a period of one and a half years (November 2000 to April 2002). That represented an increase of 44.3% within a year and a half only. Much of that increase could be attributed to the purchases made by the respondents as indicated earlier. However, natural increase of cattle was also a significant contributor to the numbers.

Table 4.19. Cross tabulation: *Control* and *intervention* groups *versus* cattle owned

Group Statistics

	Wildlife Conservation Lease Programme	N	Mean	Std. Deviation	Std. Error Mean
No of bulls in January 2003	No	47	1.3617	1.82287	.26589
	Yes	52	1.5192	1.90449	.26410
No of bulls by end of 2000	No	47	.7872	1.04124	.15188
	Yes	51	.8627	1.58770	.22232
No of bulls before 2000	No	47	2.5319	3.22929	.47104
	Yes	51	2.6275	2.36610	.33132
No of steers in January 2003	No	47	9.3830	29.36617	4.28350
	Yes	52	6.8269	10.44448	1.44839
No of steers by end of 2000	No	47	9.0638	36.30930	5.29626
	Yes	50	5.9800	10.37951	1.46788
No of steers before 2000	No	47	22.2128	55.93161	8.15846
	Yes	50	17.8400	20.03197	2.83295
No of cows in January 2003	No	47	19.5106	32.90161	4.79919
	Yes	52	17.5769	26.38430	3.65884
No of cows by end of 2000	No	47	10.9362	18.50077	2.69861
	Yes	50	10.7400	15.80856	2.23567
No of cows before 2000	No	47	28.4255	40.19342	5.86281
	Yes	50	40.0400	44.96164	6.35854
No of calves in January 2003	No	46	7.5652	9.91442	1.46180
	Yes	52	6.9808	5.70686	.79140
No of calves by end of 2000	No	46	2.6739	4.33105	.63858
	Yes	50	4.3200	9.91276	1.40188
No of calves before 2000	No	46	10.0000	16.14793	2.38088
	Yes	50	16.0400	32.01464	4.52755

Source: Survey data and SPSS analysis

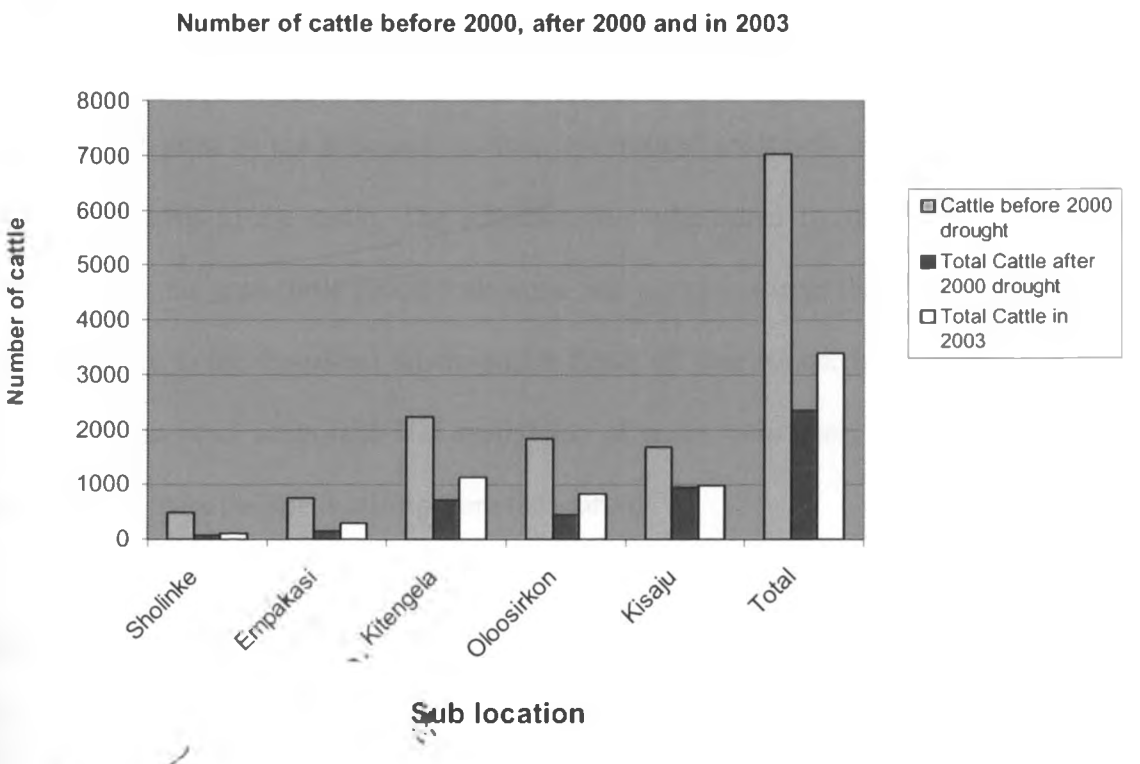
The means of the two samples are not significantly different (At 94, 95, 96 and 97 *df*, expected *t value* should be >= 1.99, 1.99, 1.99, 1.98 and 1.98 respectively). In this case the *t* values range between 1.038 and 0.056. More details in appendix III .

Table 4.20. Total number of cattle by sub location: Year 2000 and 2003

Sub location	No of respondents (n=100)	Cattle before 2000 drought	Total Cattle after 2000 drought	Total Cattle in 2003
Sholinke	18	493	81	123
Empakasi	16	757	147	308
Kitengela	25	2242	718	1146
Oloosirkon	22	1845	454	835
Kisaju	18	1689	950	978
Total	99	7026	2350	3390

The information on this table is further summarized below.

Figure 4.2: Number of cattle before the drought (2000) after the drought and in 2003



4.3.1. Numbers of cattle lost in drought (2000) and those purchased thereafter

In the year 2000 a devastating drought hit the whole country and other areas of Eastern Africa. The drought was so devastating that it has been argued that the Maasai could have lost more than a half of their cattle (GOK, 2002). The table below shows that the Oloosirkon area lost the highest number of cattle (56%) compared to the others. The Kitengela area came second with 48.8%. The Oloosirkon sub-location is closest to the Nairobi National Park. During the 2000 drought and other previous droughts, landowners within the area have been known to seek refuge in the Park in search of pastures. It may be argued that it was because of the sheer length of the drought that these people lost more cattle. Had it been shorter, their cattle would have survived in greater numbers because they were used to just crossing to the Park (though at night) and going back to their homes nearby. However, when the drought prolonged, the cattle found nothing to graze on in the Park and so had to be shifted to other far away areas. These cattle were being moved when they were already weakened. They were being subjected to unprecedented levels of stress which when combined with hunger must have contributed to the high death rates. Moreover, the grass in the Park and in other less utilised areas was moribund and of very little nutritional benefit to the cattle. The situation was aggravated by the fact that under normal circumstances, the area cattle found both water and pastures within the closest range because of their proximity to the Empakasi River, which flows all year round. It may therefore be argued that cattle from other areas with less availability of water were likely to be hardier and so they could tolerate more the stress arising from the scarcity.

However, no single reason may be taken to explain the huge losses of cattle. The range of reasons may comprise the movement into unfamiliar areas, exposure to unusual diseases, long hours of trekking in search of water and pastures and above all, possibly the lack of shelter for the animals

when the rains began to fall. The greatest losses were known to occur as soon as the rains started mainly due to Pneumonia attributed to the sharp decline in body temperatures and the associated fevers, coupled with the fact that the animals were still malnourished and very weak.

Another complicated issue is to know exactly why some landowners bought more cattle than others. The table shows that the Kisaju area people bought the highest number of cattle after the drought. An important influencing factor leading to a difference in people's purchasing power could be attributed to the periodical injection of huge amounts of cash from the sale of land. Although this could be disputable since many other people in Kitengela may be selling their land and hence could also buy cattle if they wanted, Kisaju area has for a long time been a favorite of many buyers due to its proximity to the tarmac road (Namanga Road). The resilience with which the cattle numbers build up is an important factor to take into consideration for planners and other interested parties. Coupled with the natural build up process is the fact that the *Njiro Market* (named after its location in Nairobi city) has become an important source of cattle for the Maasai especially in trade and restocking purposes. The cattle from *Njiro* were cheaper and were usually bought when in poor condition mainly due to the prevalent drought in their place of origin (mainly North Eastern Province). They were then fattened and then either sold or some females used for breeding.

These cattle, though cheap, were more susceptible to the diseases they encountered in the new areas most notable of which was East Coast Fever (ECF) and Pneumonia. They also come with a host of other diseases such as Contagious Bovine Pleuro-Pneumonia (CBPP) and Foot and Mouth Disease (FMD).

4.3.2. Movement of cattle during the year 2000 drought

About 68% of the respondents moved their cattle during the year 2000 drought in search of water and pasture while 32% of the respondents did not move. Traditionally, the Maasai moved whenever there was a drought so as to avoid losing many of their livestock (mainly cattle). The drier the areas experienced more frequent dry spells and necessitated more frequent movements whereas in the wetter areas the cattle rarely moved.

Most of the areas in Kajiado district were fairly dry (falling within Agro-Ecological Zones iv-vi) and so regular movement was necessary every two to three years. In the Kitengela dispersal area like in some other rangelands near urban centres, land sales had led to the shrinking of traditional grazing space.

With smaller parcels of land, the livestock keepers were forced to move even earlier than other people. Some of those who moved ended up going to areas where hitherto unknown diseases were common (like Trypanosomiasis in the Kilimambogo area). They ended up losing more animals than those who did not move at all. However, there are also many who did not move and still lost most of their livestock.

The table below shows that about two thirds (68%) of the respondents moved their cattle during the year 2000 drought. One third of the respondents did not move. Among those who moved, two thirds of them felt that they were not better than their counterparts who had not moved. Only about a third (33%) felt that they were better off. Nevertheless, the responses of those on both sides should be taken with caution because cattle deaths during the drought depended on a number of factors. Among these factors were: the distance covered within a given time span,

availability of water and forage (also the quality), the terrain encountered, incidence of diseases and the general management accorded the livestock-like early detection, proper diagnosis and treatment of diseases. Other factors may include the general breed of the cattle and the herd composition (the lactating cows and their calves died faster while steers and oxen died last).

The same could be said about sheep and goats although these rarely moved. The improved breeds like the Dorper sheep were less hardy and needed extra care and better pastures to do well. The Dorper sheep was the main breed of sheep in the Kitengela area although its purity varied from pedigree to crossbreeds between Dorper and the Red Maasai sheep. Most Maasai landowners had started crossbreeding their red Maasai sheep with Dorper in the 1990s. During the El Nĩno rains of 1997/98, many livestock keepers lost perhaps more than half of their sheep due to the Blue Tongue disease against which they had not been vaccinated. By the time of that disease, shoat numbers were thought to have been at their peak. The year 2000 figures should therefore be seen against hat background-a recovery from the *El Nĩno* disaster.

In this study, the respondents reported that they lost a total of 5707 sheep during the year 2000 drought. It is likely that the Dorper sheep suffered most because they are heavy feeders and were therefore more affected by the prolonged drought. The average number of sheep lost per person was 59.5 with the maximum being 351 sheep.

Table 4.21. Cattle lost in drought (2000) and those bought thereafter

Sub location	Total Cattle lost-2000 drought	Cattle purchased after 2000 drought	Average number of dead cattle
Sholinke	371	14	21.8
Empakasi	542	69	33.8
Kitengela	1145	195	47.7
Oloosirkon	1179	142	56.1
Kisaju	431	261	25.3
Total	3668	681	38.6

Source: Survey data

Figure 4.3. Cattle lost in drought (2000) and those purchased thereafter

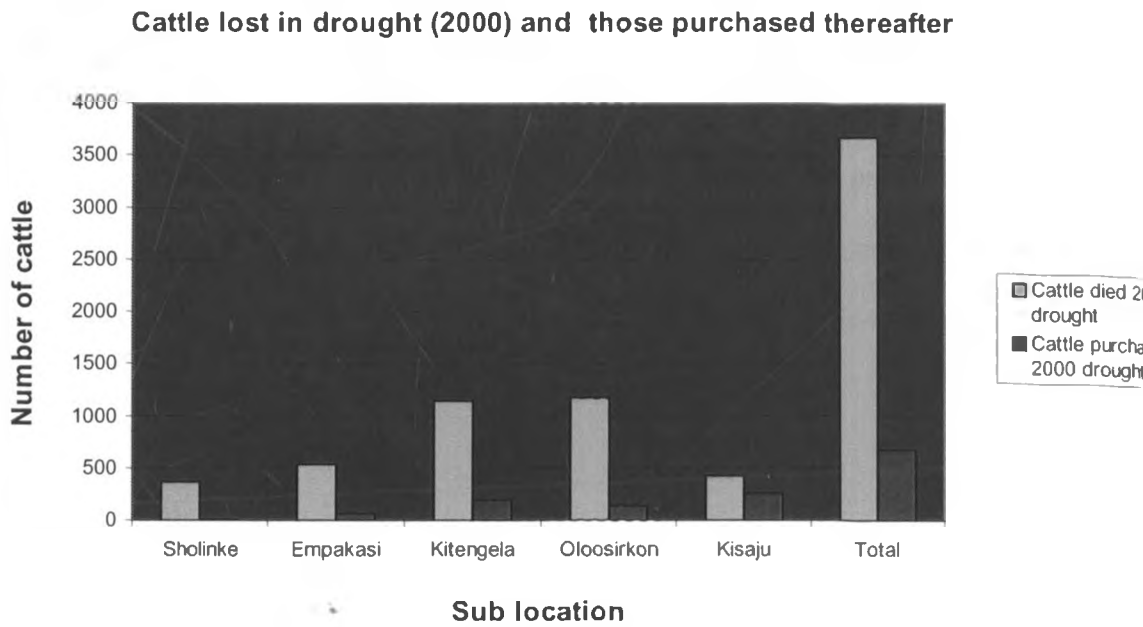


Table 4.22. Kitengela and Nairobi Park Wild herbivore population 1990-97

Year	Wild Herbivore Population	Livestock population
1990	73,711	295,660
1992	74,395	237,925
1993	53,711	184,434
1994	38,437	163,954
1996	38,437	154,425
1997	38,693	234,288

Source: Gichohi and Sitati (1997)

4.3.3. Main hindrances to livestock movement

The issue of fences in the Kitengela area was clearly becoming a problem both to livestock and wildlife as well. 55% of the respondents felt that there was reduced space for livestock movement in the Kitengela area while 45% felt that space had not shrunk. Of those who thought there was reduced space, thirty percent (30 %) of the respondents rated the prevalence of fences as the biggest hindrance to movement of cattle in the area. The other cited reasons were predators (20%) and diseases (19%). Other minor reasons included security (5%), expensive labour (5%), the weather (3%) and quarries (1%).

Table 4.23. Hindrances to Livestock movement

Hindrances	Frequency	%	Cumulative%
Fences	30	30	34.9
Disease	19	19	57
Predators	20	20	80.2
Weather	3	3	83.7
Security	5	5	89.5
Quarry	1	1	90.7
Tax	1	1	91.9
Expensive labour	5	5	97.7
Transport	1	1	98.8
Accidents	1	1	100
Total	86	86	
Missing System	14	14	
Total	100	100	

Source: survey data.

4.3.4. Status of wildlife numbers from the respondents' perspective

Numbers of wildlife in the dispersal area had fluctuated in the past (Norton-Griffiths, 2002). However, some species had either increased or decreased compared to others. This question was aimed at capturing the views of the respondents in relation to their experiences with the wildlife on their land.

was not

spite of the

Eland

The majority (60%) of the respondents reported that the numbers of Eland had dropped. Eland were among the most palatable wildlife species and their meat was easily comparable to beef (by local Maasai standards). During times of hunger or scarcity of food, the Maasai were known to kill Eland for their meat. The respondents' perceptions regarding Eland numbers were comparable to the findings in the livestock-wildlife surveys conducted by DRSRS in 2002. The DRSRS survey estimated that in comparison with the 2002 figures, the eland numbers had dropped by 82.8% and 17.1% (for 1999 and 2000 respectively).

Wildebeest

79% of the respondents reported that wildebeest numbers had dropped. The response was in line with the estimates of the 2002 DRSRS survey where the wildebeest were reported to have dropped by 70% and 40.7% (1999 and 2000 respectively). However, they were quick to add that large numbers of wildebeest were known to migrate to the Amboseli area and that partly explained the sharp decrease.

Giraffe

48% of the respondents felt that giraffe numbers had decreased. However, the DRSRS survey (2002) had estimated that giraffe numbers had consistently increased in the years 1999 and 2000 (53.7% and 58.5% respectively) in comparison to the 2002 figures.

Lions

The majority of the respondents (67%) felt that Lion numbers had increased. This species was not covered in the DRSRS survey but it is unlikely that lions had increased in the area in spite of the

decreased habitat area. The likely explanation was that due to decreasing space for both wildlife and livestock, increased conflicts were being experienced. In addition, there was increased awareness by the residents of Kitengela area pertaining issues of Human Rights and policy. They had challenged the existing law for ignoring the plight of those who lost property to wildlife.

Ostrich

67% of the respondents felt that ostrich numbers had increased while a further 25% of them felt that their numbers had been static. Overall, ostrich numbers had been reported to be on the rise. However, the DRSRS survey showed that there had been a downward trend between the years 1999, 2000 and 2002.

Gazelles

72% of the respondents reported an increase in gazelle numbers (both Grant's and Thomson's were lumped together). These ratings were in agreement with the findings of the DRSRS survey which reported a significant growth in the numbers of both the Thomson's and the grant's gazelles (see Table 4.22 below).

Kongoni

The Kongoni was one of those species whose numbers were seen to have dropped over the years. Both the DRSRS survey and the respondents' view (59% reported a decrease) agreed that there had been a drop in numbers.

Hyena

For the Hyena, only 10% of the respondents thought that they had decreased. The majority (73%) reported an increase while (16%) thought the numbers had remained stable. However, it is likely that the hyena numbers were exaggerated due to the disturbance they caused to livestock keepers.

In the ACC survey (Mwangi and Warinda, 1999) the respondents reported that some wildlife species had decreased. These included the Eland (-53.8%), and giraffe (-58.5%). The number of respondents who reported that gazelles had increased was 69%, Zebra (76.6%), Wildebeest (56.7%), Hyena (78.4%), Lions (48%), Jackals (60.8%) and Baboons (38.6%).

For some of the above wildlife species, serious conflict with the landowners was experienced seasonally. High up on the conflict intensity list were the predators, the Eland, the Buffalo and the Baboons. The giraffe and the Ostrich were reported to be the least harmful animals and therefore the most tolerated.

Table 4.24. Respondents' perceptions of wildlife trends by %

Wildlife Species	Perception: Decreased (%)	Perception: Static (%)	Perception:Increased (%)
Eland	60	23	17
Wildebeest	79	3	17
Giraffe	48	33	19
Lion	29	4	**67**
Ostrich	17	25	**58**
Gazelles	12	16	**72**
Kongoni	59	17	24
Hyena	10	16	**73**

Source: Survey data

4.4. Some reasons for the decline in wildlife numbers

Introduction

Debate about wildlife numbers either declining or stabilizing over the past years has been goir on for long (Norton-Griffith, 2002; Prins, 2000). However, numbers have been known fluctuate mainly because of births (with some good and bad years) or deaths (the numbers als varied in different years). One such cause of the decline in numbers was poaching (fo subsistence and for trade purposes).

The landowners in the dispersal areas were likely to either participate in the poaching or see th people who did the poaching. A number of questions were asked to try and establish some fac about the activity.

4.4.1. Respondents' awareness of poaching

About half of the respondents were aware that poaching was taking place. However it is likely that many more were aware of it but could not disclose the information due to its sensitive nature. Only those who were convinced that the information would not be used to harass them divulged it. Further, respondents were afraid that after saying that they knew of poaching activities, they might be bothered further to mention specific people who were involved. Some of those people were known but the Maasai hardly bothered to inform the outsiders since evidence was always difficult to come by without engaging into confrontations. The frustrating thing was also the facts that even if the culprit was arraigned in court, the sentences were mainly short or small fines were paid.

Table 4.25. Respondents' awareness of Poaching

	Frequency	%	Cumulative %
No	49	49.0	49.0
Yes	51	51.0	100.0
Total	100	100.0	

Source: Survey data

The respondents were further asked if they knew who was behind the poaching. They reported that the local residents were least involved. Outsiders were the most involved but in most cases it was the outsiders liaising with the local people. Generally, most of the poachers were known by their neighbours but people were not eager to divulge information for fear of revenge and other material and inconvenience-related consequences. The table below gives a summary of the responses.

Table 4.26 People behind the poaching

Poacher	Frequency	%	Cumulative %
Local residents	8	8	29.6
Outsiders	9	9	63
Local residents &outsiders	10	10	100
Total	27	27	
Missing System	73	73	
Total	100	100	

Source: survey data

The respondents were asked if they thought that the Lease program was an appropriate intervention to dissuade landowners from engaging in poaching. 74.6% (n=71) suggested that the Lease program would reduce poaching if more people joined it. 25.4 of the respondents thought it would not.

Table 4.27 Suitability of Lease programme as intervention against poaching

	Frequency	%	Cumulative %
No	18	18	25.4
Yes	53	53	100
Total	71	71	
Missing System	29	29	
Total	100	100	

Source: Survey data

4.4.2. Reasons for poaching

The reasons why some species were being killed more than others were important. By knowing the reasons behind the killings, those dealing with the problem would possibly come up with more appropriate interventions targeted at the right people. Of the responses given by the respondents, 61.2% thought that poaching of a certain species was influenced by its palatability (for example the Eland and the Wildebeest), or a weakness in its defence mechanism – about 10% (for example the Wildebeest was easier to kill than the Zebra). The egalitarian behaviour of the Wildebeest also made them more vulnerable and easier to kill. They ran into fences with very little provocation unlike the Zebra that moved in small numbers.

Table 4.28 Reasons for poaching

Reason	Frequency	%	Cumulative %
Palatability	30	30	61.2
Weakness\Vulnerability	5	5	71.4
Palatability, good weight in market	1	1	73.5
Palatability, weakness	9	9	91.8
Palatability\ready market	4	4	100
Total	49	49	
Missing System	51	51	
Total	**100**	**100**	

Source: Survey data

4.4.3. Possible interventions against poaching

The table below shows that 77.6% of the respondents (n=58) suggested that locally sourced community-based scouts be employed to boost security for the wildlife outside the protected area. There was the realization that the KWS Rangers were very few and under resourced to be able to adequately provide protection for all wildlife. Only 17.2% of the respondents thought that increasing KWS Rangers would solve the problem. The rest (about 5.2%) suggested that fencing the Park, joining the Lease program or joining the Friends of Nairobi National Park (about 1.7% each) was the solution to the problem. The main advantage with community scouts would be the

fact that they knew the people and the area very well and would therefore know the problems and the solutions better. Other studies have shown the importance of local knowledge in dealing with local issues (Chambers, 1983).

Table 4.29 Other possible measures to curb poaching

Curb poaching	Frequency	%	Cumulative %
Community scouts	45	45	77.6
KWS rangers	10	10	94.8
Fencing of park	1	1	96.6
People to join FoNNaP	1	1	98.3
The lease programme	1	1	100
Total	58	58	
Missing System	42	42	
Total	100	100	

Source: Survey data

4.4.4. Best incentive for community to conserve wildlife

The respondents were given choices to choose from regarding what they considered to be the most effective incentive for wildlife conservation outside protected areas. The respondents suggested that revenue sharing (34.1%), compensation for losses (30.7%) or a combination of both (27.4%) would be the most important interventions.

The suggestions by the respondents underscore the importance of revenue sharing with communities as a mechanism to ensure sustainable wildlife conservation outside protected areas. Studies from numerous studies lend support to this proposition (Emerton, 1999; Mwangi and Warinda, 1999; IIED, 1994; Juma C. and Ojwang J.B.eds, 1996; Norton-Griffiths M. and Southey C., 1994; Gichohi, 1996; Nkedianye, 1999). The main argument is that if people benefit from wildlife then they would protect it from harm, so that the benefit can continue flowing for a longer period.

There is a strong sociological backing for this argument in the social exchange theory as advanced by Homanns and Peter Blau both of whom single out the norm of reciprocity as an important guiding factor of people's behaviour.

Table 4.30 Best incentive for community to conserve wildlife

Incentives	Frequency	%	Cumulative %
Revenue sharing	30	30	34.1
Compensation for loses	27	27	64.8
Increased security for wildlife	2	2	67
Revenue sharing, compensation for losses	26	26	96.6
Revenue sharing, fencing the park	2	2	98.9
Compensation\KWS to put fence	1	1	100
Total	88	88	
Missing System	12	12	
Total	100	100	

Source: Survey data

Animal species most threatened by Poaching

32% of the respondents reported that the Zebra were the ones killed most by the poachers. Part of the explanation for that could be that they were the most ubiquitous (and hence arose the issue of availability), and partly due to the fact that they were likely to fetch more money in the market due to their heavier weight (as compared to the wildebeest and the Kongoni). The Wildebeest were reported as the second most poached species. In terms of palatability to the local people, the wildebeest was more likely to be killed for food than the Zebra. However, the urban market

demanded just meat (or protein), and the question of choice was overlooked to widespread poverty levels.

The other species mentioned as being in danger from poachers (though on a smaller scale) were the Giraffe, the Gazelles, the Lion and the Ostrich.

Table 4.31 Poachers' favourite species

Poached species	**Frequency**	%	**Cumulative %**
Zebra	32	32	64
Wildebeest	13	13	90
Giraffe	2	2	94
Gazelles	1	1	96
Lions	1	1	98
Ostrich	1	1	100
Total	50	50	
Missing System	50	50	
Total	100	100	

Source: Survey data.

4.6.7 Comparative figures for wildlife and livestock in the Kitengela dispersal area: 1999-2000

Livestock numbers have fluctuated over the years mainly due to droughts and diseases. During the El Nino phenomenon in 1997/8, large numbers of sheep were lost due to the *Blue Tongue* disease, which swept across both Kajiado and Narok districts of Kenya. It can be seen from the

table below that the 1999 figures are lower than those of 2002 mainly because the flock numbers were just recovering. However, the biggest loss of biomass is attributable to the large numbers of cattle lost during the 2000 drought (in many areas of Kajiado up to 60% of cattle were lost). That partly explains why there is a greater difference between the 2000-2002 as compared to the 1999-2002 figures.

With regard to wildlife, apparently there was a decrease in the numbers of Wildebeest, Eland, Kongoni, and Ostrich. Although many landowners thought that the Ostrich numbers had increased, it was likely that the numbers either reduced or stagnated due to the rampant collection of eggs for (for hatching) a number of Ostrich farms in Kitengela and elsewhere in the mid to late 1990s. During that time, large numbers of eggs were collected from ostrich nests and sold to the farms for hatching.

Table 4.32 Wildlife and Livestock numbers 1999, 2000 and 2002: Athi-Kapiti Ecosystem

Species	1999 February	**2002 April**	**Diff.**	2000 July	**2002 April**	Diff
	PE	PE	**% diff**	PE	PE	**% diff**
Cattle	76,282	64,033	**-16.1**	28,734	64,033	**55.1**
Donkey	573	547	**-4.5**	234	547	**57.2**
Camel	66	29	**-56.1**	0	29	**100.0**
Sheep and Goat	82,830	106,471	**28.5**	70,420	106,471	**51.2**
Livestock (sub-total)	**159,751**	**171,080**	**7.1**	**99,388**	**171,080**	**41.9**
Buffalo	152	9	**-94.1**	19	9	**-52.6**
Eland	563	97	**-82.8**	117	97	**-17.1**
Grant's Gazelle	4,722	7,767	**64.5**	3,691	7,767	**52.5**
Thomson's Gazelle	1,443	4,823	**70.1**	1,230	4,823	**74.5**
Giraffe	229	352	**53.7**	146	352	**58.5**
Impala	1,701	1,291	**-24.1**	800	1,291	**38.0**
Kongoni	2,695	2,083	**-22.7**	2,539	2,083	**-18.0**
Ostrich	678	528	**-22.1**	693	528	**-23.8**
Rhino	124	29	**-76.6**	9	29	**69.0**
Burchell's zebra	2,561	9,920	**74.2**	6,944	9,920	**30.0**
Wildebeest	13,382	4,020	**-70.0**	6,778	4,020	**-40.7**
Wildlife (sub-total)	**28,250**	**30,919**	**9.4**	**22,966**	**30,919**	**34.6**
Animal carcass		88			88	

Source: DRSRS, Livestock and Wildlife surveys Preliminary Report (2002), pp.2-3.

4.5. Participation in the Lease Program

Introduction

The ACC survey (Mwangi and Warinda, 1999) assessed the landowners' acceptability of an easement program if in return they were paid a modest sum of money to leave their land open for wildlife. Two thirds of the respondents showed willingness to enter into such an arrangement. The survey therefore recommended that landowners be involved in conservation where direct benefits could be paid commensurate to the open space provided.

In the year 2000 the wildlife conservation lease Program was started as a pilot program by the Friends of Nairobi National Park (*FoNNaP*) with financial support from The Wildlife Trust (USA). The idea was to involve the landowners as conservation partners with benefits flowing directly to them. Initially, the FoNNaP injected only a modest amount of money while the larger sum came from the *Wildlife Trust* (U.S.A). In 2002, the program was transferred to *The Wildlife Foundation* (Kenya) a locally registered non governmental organization dedicated to conservation in the dispersal area. The project started with few landowners and gradually registered more. By abiding with a number of conditions as set out on the Lease contract lasting one year, they were paid KSh.300.00/acre /year.

4.6. Year of joining the Lease program

Of all the sub-locations, Kitengela had the biggest number of landowners on the Lease program. Part of the reason for that was that it was larger than the rest. Further, by the time the Lease program was being inaugurated Sholinke sub-location was still within the larger Kitengela sub-location. However, after the first year since the inauguration of the project, priority areas were set and they were being given preference. These were the areas closest to the Park and the Namanga road (tarmac). In total, 11, 25 and 14 landowners joined the program in the years 2000,

2001 and 2002 respectively. By the time of this study, more landowners had joined the program in the year 2003 but were excluded from this study since they were not there long enough for impact to be properly measured. Records in the month of September 2003 showed that 117 landowners were on the Lease program with a total of 8,545 acres of land. A plan was underway to increase the acreage under the Lease program to about 20,000 acres by January 2004 (Pers. Comm. With Program Co-coordinator).

Table 4.33 Year of joining the Lease programme by number and sub-location

Sub location	Year of joining	Frequency
Sholinke	2000	2
	2001	2
	2002	1
	Total	**5**
Empakasi	2000	3
	2001	5
	2002	1
	Total	**9**
Kitengela	2000	3
	2001	9
	2002	6
	Total	**18**
Oloosirkon	2000	1
	2001	2
	2002	5
	Total	**8**
Kisaju	2000	2
	2001	7
	2002	3
	Total	**12**
Total	**2000**	**11**
	2001	**25**
	2002	**16**
	Total	**52**

Source : Survey data and *TWF* records

4.7 The number one benefit from joining the Lease program

94% of the respondents cited school fees as the greatest benefit they received from joining the Lease program. The number two benefit was cited as the fact that the landowners were less likely to sell their land (70%). Other reasons included the repairing of homesteads (16%) and buying drugs for livestock (6.4%).

4.8 Willingness to remain on the Lease Program

The table below shows that all those who were on the lease program were willing to remain on it. No respondent wanted to drop out of it. Perhaps the main reason was that the direct benefits they were getting in form of the lease payments were the best incentive they had received so far from wildlife conservation. Also, the cost of being on the lease was negligible to the landowners since the conditions they committed themselves to abide by were not different from what they did traditionally. Keeping their land open (without a perimeter fence), discouraging any poaching and picking up any snares, not sub-dividing the land further and not developing any quarries were not new conditions to be followed. The other advantage was that their livestock benefited greatly by having free movement. Fences were beginning to be a big hindrance to movement of livestock.

However, the question of duration since joining the lease program was important to take into account. It is likely that after a longer period on the lease program some landowners would opt out if they got better economic options and especially if there was any other dissatisfaction.

4.9 Lease contract duration

The respondents were asked what they thought about the Lease contract duration. The current position was that the contract was renewed every year. The table below shows that out of the 51 participants who responded to this question, 28 of them (54.9%) felt that the lease contract

duration of one year was enough and should not be changed. 17 of them (34%) preferred a longer Lease contract period of five years, while 6 of them (11.1%) felt that it should be increased to 2 years. Overall, about half of the respondents on the lease program felt that the lease contract duration ought to be increased. Part of the reason for this response may be attributed to the fact that the landowners were developing increased trust in the arrangement and were no longer afraid that their land "could be stolen" as had earlier been rumored. With that kind of confidence already in place, perhaps it was high time that the lease contract duration was increased to bind landowners for longer periods and for better planning purposes. The table below summarizes the responses of those interviewed.

Table 4.34 Duration of the lease contract

Opinion	**Frequency**	**%**	**Cumulative%**
Enough	28	28	54.9
Increase to 2 years	6	6	66
Increase to 5 years	17	17	100
Total	51	51	
Mission System	49	49	
Total	100	100	

Source: survey data.

4.10 Amount of land under the Lease program

The 52 landowners on the Lease program had 5,157 acres of land under payment and about four thousand others on the waiting list (Personal Communication with Project Officer). For the majority of them, only part of their land was on the lease program. They had been promised that more land would be put under the program as soon as funds were available.

4.11 Amount of money received in 2000, 2001 and 2002

The respondents acknowledged the fact that the amount of money they had received in the three years since the program began had been increasing gradually. In 2000, the total amount paid was KSh.125,400/- while in 2001 it increased to KSh.713,031/-. In 2002, the figure further rose to KSh.,225,295/-. The money was paid three times a year to coincide with school opening dates. By the time of this study, the total figure had risen to KSh.2.7 million/annum and 117 families involved. The land under lease had also increased to 8,550 acres.

Table 4.35 Amount of money received in KSh.2000-2002 (n=52)

	Received in 2000	Money received in 2001	Money received in 2002
Minimum	0.0	0.0	1,500
Maximum	30900	71,000	75,050
Mean	2508	13,712.13	23,563.40
Sum	125,400	713,031	1,225,295

Source: survey data

4.12 Cultural practices

Introduction

Most of Kenya's wildlife can be found outside protected areas and in the arid and semi-arid regions of the country where livestock keeping is the main occupation of the residents. Besides keeping livestock, these pastoralists have been known (especially the Maasai) not to eat wildlife meat except in times of extreme hunger. The Maasai have had a negative attitude towards game meat and will rarely kill game for food. However, recent changes mainly with regard to formal education, exposure to other cultures, overdependence on the cash economy and soaring levels of

poverty have slowly been eroding their attitudes towards game meat. These changes are likely to lead to more Maasai to consume game meat whenever it was available. This section was aimed at looking into issues pertaining to cultural practices, the inherent changes and how these impacted on wildlife conservation in the area.

4.13 Attitude towards game meat

The result revealed that nearly 61% of the respondents eat game meat currently. That was a notable change, because the majority of the Maasai were in the past known not to eat game meat. The implication of that finding was that if more and more people ate game meat, then there would be more pressure on the available wildlife species especially the so-called palatable ones. Perhaps attaching some monetary benefit to the wildlife would lead to a more sustainable utilization of wildlife in the area and elsewhere.

4.14 Hunting of Lions as a test of bravery

The two tables below show that only 7% of the respondents thought that Lions were still hunted as a sign to show bravery by the warriors. 91% of the respondents felt that the practice was no longer in existence in the area. These findings buttress the argument by the landowners who argued that they hardly ever killed lions as sport but always in retaliation for their killed livestock.

Table 4.36 Hunting of Lions to show bravery

Practice	Frequency	%
Fully	1	1
Partially	6	6
No longer	91	91
Total	98	98
Missing System	2	2
Total	100	100

Source: Survey data

4.15 Lion killing in retaliation for livestock killed

With regard to killing of lions whenever they killed livestock, 82.7% of the respondents reported that such retaliation was either fully or partially in practice. Only 17% thought that the practice was no longer in force.

The absence of a standing warrior group (Ilmurran) in the North Kaputiei area (due to the emergence of schooling as an alternative occupation for the youth) had drastically reduced the chances of any Lion being killed as a routine or as a sport.

Table 4.37 Killing of a Lion in retaliation for killed cow

Cultural practices	**Frequency**	%	Cumulative%
Fully in practice	42	42	42
Partially practiced	39	39	82.7
No longer practiced	17	17	100
Missing System	2	2	
Total	100	100	

Source: Survey data

4.15.1 Killing of birds to adorn circumcision initiates (Illaibartak)

97 % of the respondents reported that killing of birds to adorn circumcision initiates was no longer in practice. This was a common practice about fifteen years ago but it had died away mainly due to the influence of formal education. For conservation, this was a positive development because both the Lions and the birds were less in danger of being killed by the youth. For the Lions especially, killing only arose whenever they had killed livestock. In recent years, and due mainly to lack of exposure (as Ilmurran), many young people were scared of lions and it took some amount of peer pressure for the young men to go out and participate in the activity even when a lion had killed livestock.

Table 4.38 Killing of birds to adorn circumcision initiates

Practice	Frequency	Percent	Cumulative
Partially	1	1	1
No longer	97	97	100
Total	98	98	
Missing System	2	2	
Total	100	100	

Source: Survey data

4.15.2 Percentage of people who ate game meat at the time of the interview

The table below shows that respondents with formal education as well as those without formal education ate game meat, contrary to what happened some years ago when most Maasai would not. Due to the smaller number of respondents without formal education, caution should be exercised while interpreting the figures in the table below. It may not necessarily mean that those without formal education were less likely to eat game meat.

Table 4.39 Level of education *versus* those who ate game meat

Sub location	**Level of education**	**% Of people who eat game meat now**
Sholinke	No formal education	7
	With formal education	11
	Total	**18**
Empakasi	No formal education	3
	With formal education	13
	Total	**16**
Kitengela	No formal education	12
	With formal education	14
	Total	**26**
Oloosirkon	No formal education	10
	With formal education	12
	Total	**22**
Kisaju	No formal education	10
	With formal education	18
	Total	**28**
Total	**No formal education**	**42**
	With formal education	**58**
	Total	**100**

Source: Survey data

4.16 General attitudes towards wildlife conservation

Introduction

As a *quasi*-experimental study, this study was aimed at attempting to capture the similarities and differences between an intervention group (landowners on the Lease program) versus those not on the program. The Likert scale on a 1-5 rating was used in this study (same rating used in ACC survey) to measure the differences and/or similarities between those on the lease program on the one hand, versus those not on it on the other. Results on both sides would then be compared with those of the 1999 study by ACC. In this study, the assumption was that those who had joined the Lease program (the intervention group) would show some degree of tolerance to wildlife since they were getting some direct benefits from it. They were therefore expected to show positive attitudes towards wildlife. On a rating of five on the Likert scale, this group would be expected to fall between 1-2 (strongly agree to agree) while responding to questions that favoured wildlife conservation. Further, this group was expected to be different from those interviewed in 1999 in the ACC survey before the lease program commenced.

On the other hand, those not on the Lease program (the control group) were expected to show similarities with those interviewed in 1999 (Mwangi and Warinda 1999) since the two groups shared the similarities of not being direct beneficiaries of income from wildlife conservation. On the same scale, their responses were expected to fall between 4-5 (disagree or strongly disagree) on questions favouring wildlife conservation.

To capture the status of the respondents' perceptions towards wildlife, a set of fourteen statements eight of which were replicated from the ACC study (Mwangi and Warinda, 1999)

were posed to all the respondents in this study. The responses of both those on the lease program and those not on it are analysed below:

4.17 Attitude score by percentage

Among those not on the Lease program, the majority (53%) disagreed with the statement that **wildlife was important to them**. A significant though slightly less than half (43%) of the respondents either agreed or strongly agreed that wildlife was important to them. The important aspect of these responses is that irrespective of the fact that these landowners were not benefiting directly from wildlife they still thought that wildlife was important to them. For those on the Lease program, the response to the same question was overwhelmingly clear and positive: 96.1% of the respondents either agreed or strongly agreed that wildlife was important to them. None were undecided on the issue and a paltry 3.8 % disagreed with the statement. It is highly likely that this group's perceptions were influenced by the benefits from the lease program. They knew that it was because of wildlife that the benefits were getting to them. Without the wildlife there would be no benefits to them. The benefits were directly linked to the presence of wildlife on their land.

Regarding the second statement, 54% of those not on the Lease program either agreed or strongly agreed that **wildlife conservation was important to society and future generations**. The other half was split between either the undecided category or the disagreeing side. On the other hand, 90.4 of those on the Lease program either agreed or strongly agreed with the statement. The rest were split between the other options. The responses were also a clear indication that those on the Lease program attached great importance to wildlife.

The third statement suggested that **the respondents' land be left open for free movement of both livestock and wildlife while generating benefits to the landowners**. For those not on the Lease program, 79.2% of them either agreed or strongly agreed with the statement. On the other hand, those on the lease program agreed even more: 92.1% of the respondents either agreed or strongly agreed with the statement. None were undecided. The Lease program had influenced their decision. The other important aspect of this response was the strong indication that the respondents were aware of the importance of wildlife as a source of income and were ready to accommodate it on their land as long as it generated income for them.

When the opposite of the statement was posed to the respondents i.e. **Leaving the land open without benefits to the landowners,** the opposite was seen in the response: 77.1% of those not on the Lease program either disagreed or strongly disagreed with the statement. For those on the Lease program 58.9% either disagreed or strongly disagreed with the statement. The difference may be attributed to the fact that those on the Lease program were more sympathetic to wildlife even when benefits were not the main driving force because they were already enjoying some benefits. Those not on the program would not tolerate wildlife on their land unless they got benefits to offset some of the costs associated with harbouring wildlife on their land (Emerton, 1999). It is also likely that since joining the program, the respondents had developed some kind of sympathy for the wildlife.

With regard to the fifth statement: **all landowners should fence their land,** 55.3% of those not on the lease program either agreed or disagreed with the statement. The most likely reason for the response may not be associated entirely with love for wildlife but the fact that fences were also quite detrimental to the movement of livestock.

The responses were more dramatic for those on the Lease program: 92.3% either disagreed or strongly disagreed with the proposal to fence their land in the dispersal area. For this group, fencing their land would be a double tragedy because the lease money would disappear and their livestock would suffer from lack of pastures. Fencing the Park would therefore jeopardise their hopes for a source of livelihood, especially the income from the lease program.

The next statement was a proposal **to have both livestock and wildlife sharing resources i.e. water and pastures**. For those not on the Lease program, 60.4% either agreed or strongly agreed with the statement. The rest were either undecided or in disagreement. On the other hand, 82.7% of those on the lease program either agreed or strongly agreed with the statement. The significance of this difference is that once again those on the Lease program (the intervention Group) showed more agreement with wildlife-related issues than their counterparts not on the program.

In the next statement about **the development of tourist related activities in the area**, 74.5%, of those not on the Lease program either agreed or strongly agreed (most of them strongly agreeing) that tourist activities be developed in the dispersal area. Interestingly, their counterparts on the Lease program were more in agreement with the statement; 88.5% of them either agreed or strongly agreed (again the majority of them strongly agreeing) that tourist ventures be developed in the area. This statement was also strongly supported by landowners interviewed during the ACC survey (Mwangi and Warinda, 1999) (see table 4.40 below). This may be an indication that people in the Kitengela Wildlife Dispersal area have for a long time been in support of wildlife and the development of tourist-related activities in the area.

85.7% of those not on the Lease program strongly agreed that **the government plough back the revenue from Nairobi National Park into the Kitengela area**. 92.3% of their counterparts on the Lease program supported the statement. This shows that government policy not to share revenue directly with communities adjacent protected areas was strongly opposed. In the Kitengela area, residents always felt that they were getting a raw deal from the government in spite of their long support for wildlife conservation.

89.6% of those not on the lease program either disagreed or strongly disagreed with the statement that **the government's method of conflict resolution were fair.** Similarly, 86.3% of those on the Lease program disagreed (most of them strongly) with the same statement. One of the biggest bottlenecks to wildlife conservation in the area and in many other parts of the country was the manner in which Kenya Wildlife Service and by extension the government handled issues relating to conflict between wildlife and landowners and their property. In 1989 the Wildlife Conservation and Management (Amendment) Act was enforced. Part of its effect was to strike off compensation for property. Even for the death or injury of a person, the highest amount payable was set at KSh. 30,000. The Act has always been seen by landowners especially those in wildlife-rich areas as an indication of the government's lack of commitment in conservation issues. Besides, the Rangers were always seen as being incompetent in handling matters pertaining to human-wildlife conflict. They were known to harass innocent people and setting free the criminals.

Similarly, 93.4% of those not on Lease program felt that **the government's methods of revenue sharing were unfair.** Those on the Lease program equally supported the view: 98% of them

rated as unfair the government's methods of revenue sharing. Both sides definitely felt that they were not treated as important stakeholders since all the revenue from the Park was always taken away to the central government's kitty and nothing was directly allocated to those living in the dispersal areas. Those on the Lease program knew that the money they were getting emanated from private enterprise and not from the government.

91.9% of those not on the Lease program either disagreed or strongly disagreed with the statement that **the conflict minimisation methods by the Kenya Wildlife Service were adequate**. Their counterparts on the Lease program expressed the same view where 88.4% of them fell within the same category. Perhaps the latter group were more sympathetic to KWS mainly because they interacted more with them on a positive cause i.e. during the cheque presentation ceremonies for the Lease program, and also the fact that wildlife was an important asset to both parties (those on the Lease program and the KWS).

55.1% of those not on the lease program either agreed or strongly agreed that **the Lease program was an adequate method for saving wildlife outside protected areas**. Interestingly, 20% of the respondents were undecided on the matter. On the other hand 86.5% of those on the Lease program either agreed or strongly agreed that the Lease program was an adequate method of saving wildlife outside protected areas. On the contrary only 5.8% of the respondents were undecided on the matter. More importantly, none at all disagreed with the statement. That could be an indicator of how popular the Lease program was both to those on it and those not.

60.5% of those not on the Lease program disagreed with the idea of preferentially selling land to conservation organisations. For those on the Lease program, 54.9% disagreed with the idea.

Although the Lease program may have influenced them to favour the idea more than those not on the program, Perhaps both groups were expressing fear over what would happen if conservation organisations were to own large tracts of land outside protected areas. The other reason could be that they were afraid that the government could use such avenues to evict them from their land to create room for wildlife.

Finally, the question of **whether or not to fence the Nairobi National Park** was asked. It was posed as a statement so that, like the previous statements, the respondents could either agree or disagree. For those not on the Lease program, 70.2% either disagreed or strongly disagreed with the proposal to fence the Park. It may be that they saw an opportunity in future of benefiting from an open Park like their counterparts who were on the Lease program. However, the issue of fencing the Park was always treated with caution by the landowners. They were afraid that the river Empakasi (Mbagathi) that formed part of the boundary between the Park and the dispersal area would become more inaccessible to both people and their livestock. This river was the only permanent source of water in the area and it played an important role during the very dry periods. The other reason may be attributable to the fact that the local Maasai felt bound to the Park from an historical perspective. They argued that the land was hived off from their traditional grazing area and that fencing it off would symbolically and physically sever their ties to it.

On the other hand, those on the Lease program were even more emphatic regarding the issue of putting up a fence: 84.9% of them either disagreed or strongly disagreed with the idea of fencing the Park. They clearly had more at stake than those not on the Lease program: if the Park was fenced, the wildlife outside the Protected area would probably disappear and with its disappearance would go the direct benefit they were receiving through the Lease program. The

important thing to note is that the respondents on the Lease program were more opposed to the fencing of the Park.

The likely reason for that is that whenever people receive benefits (from wildlife or any other source), they will try hard to guard that source because it is in their own interest that the benefit is sustained. A fence was likely to throw the Kitengela area into oblivion as far as wildlife conservation was concerned.

The weighted attitude ratings by percentage are shown below:

Table 4.40 General attitudes towards wildlife: those not under Lease Program by %

Statement	%Strongly agree	%Agree	% Undecided	%Disagree	%Strongly disagree
Wildlife is important to you	24.5	18.4	4.1	**20.4**	**32.4**
Wildlife conservation is important to society and future generations	**33.3**	**20.8**	10.4	14.6	20.8
Area be left open for livestock and wildlife with benefits	**41.7**	**37.5**	2.1	6.3	12.5
Area be left open for livestock and wildlife without benefits	10.4	10.4	2.1	**10.4**	**66.7**
All landowners to fence their land to keep away wildlife	27.7	12.8	4.3	**21.3**	**34**
Livestock and wildlife to share basic resources (water & pasture)	**12.5**	**47.9**	8.3	18.8	12.5
Development of tourist related activities be encouraged	**51.1**	**23.4**	12.8	8.5	4.3
Government to plough back revenue from NNP to the area	**71.4**	**14.3**	0	2.	12.2
Government policy re: human-wildlife conflict resolution fair	4.2	4.2	2.1	**31.3**	**58.3**
Government policy re: wildlife revenue sharing with communities fair	4.3	0	2.2	**13**	**80.4**
KWS' conflict minimisation methods adequate	0	4.1	4.1	**18.4**	**73.5**
Lease Program an adequate method for saving wildlife	**20.4**	**34.7**	**20.4**	8.2	16.3
Would prefer to sell land (if necessary) to a conservation related organization	20.8	10.4	8.3	**6.3**	**54.2**
Fenced Nairobi National Park would be more beneficial	16.7	2.1	10.4	**4.2**	**66**

Source: Survey data

Table 4.41 General attitudes towards wildlife: Those under Lease Program, by %

General attitudes towards wildlife: those on the Lease Program by% and category

Statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Wildlife is important to you	**61.5**	**34.6**	0.0	1.9	1.9
Wildlife conservation is important to society and future generations	**55.8**	**34.6**	5.8	1.9	1.9
Area be left open for livestock and wildlife with benefits	**58.8**	**33.3**	0.0	3.9	3.9
Area be left open for livestock and wildlife without benefits	9.8	21.6	9.8	**11.8**	**47.1**
All landowners to fence their land to keep away wildlife	5.8	0.0	1.9	**32.7**	**59.6**
Livestock and wildlife to share basic resources (water & pasture)	**38.5**	**44.2**	9.6	3.8	3.8
Development of tourist related activities be encouraged	**67.3**	**21.2**	7.7	1.9	1.9
Government to plough back revenue from NNP to the area	**76.9**	**15.4**	0.0	0.0	7.7
Government policy re: human-wildlife conflict resolution fair	5.9	7.8	0.0	**29.4**	**56.9**
Government policy re: wildlife revenue sharing with communities fair	0.0	0.0	2.0	**22.0**	**76.0**
KWS' conflict minimisation methods adequate	3.8	5.8	1.9	**34.6**	**53.8**
Lease Program an adequate method for saving wildlife	**50.0**	**36.5**	5.8	7.7	0.0
Would prefer to sell land (if necessary) to a conservation related organization	23.5	11.8	9.8	**11.8**	**43.1**

4.17.1 Weighted general attitudes (rating of 1-5 on the Likert scale)

A comparison was also attempted between the findings of this study and those of the ACC survey. The table below shows that there was a great similarity between the attitudes of respondents in the ACC survey and those of respondents in the control group of this study. However, there were significant differences between those two groups and the intervention group in this study. The main explanation for that could essentially be based on the fact that the intervention group was comprised of people who received direct benefits from wildlife and hence their different (and positive) attitudes towards wildlife and its conservation. Moreover, those who benefited from wildlife had an obligation to protect it so as to try and sustain the flow of that benefit.

On the other hand, all the respondents agreed on some issues. These included: that the government plough back revenue from Nairobi National Park into the dispersal area, that government policy in human-wildlife conflict resolution was unfair and that KWS' conflict minimization methods were inadequate.

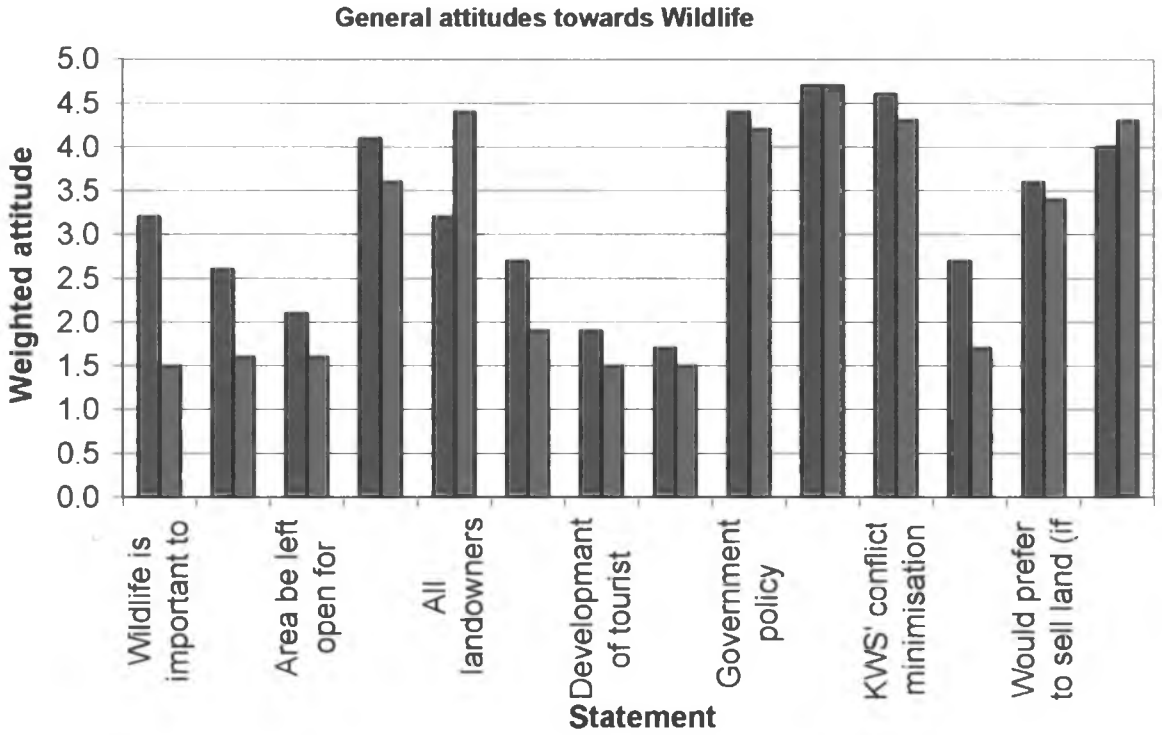
Table 4.42 Attitude score on a five-point Likert scale

Statement	On Lease	Not on Lease	ACC survey 1999
Wildlife is important to you	1.5	3.2	3.20
Wildlife conservation is important to society and future generations	1.6	2.7	2.76
Area be left open for livestock and wildlife with benefits	1.6	2.1	
Area be left open for livestock and wildlife without benefits	3.6	4.1	
All landowners to fence their land to keep away wildlife	4.4	3.2	2.57
Livestock and wildlife to share basic resources (water & pasture)	1.9	2.7	3.73
Development of tourist related activities be encouraged	1.5	1.9	1.79
Government to plough back revenue from NNP to the area	1.5	1.7	1.68
Government policy re: human-wildlife conflict resolution fair	4.2	4.4	4.75
Government policy re: wildlife revenue sharing with communities fair	4.7	4.7	
KWS' conflict minimisation methods adequate	4.3	4.6	4.72
Lease Program an adequate method for saving wildlife	1.7	2.7	
Would prefer to sell land (if necessary) to a conservation related organization	3.4	3.6	
Fenced Nairobi National Park would be more beneficial	4.3	4.0	

Source: Survey data and ACC Survey, p.48.

1=Strongly agree 2=Agree 3= Undecided 4=Disagree 5=Strongly disagree

Figure 4.4. Comparison of weighted general attitudes towards wildlife: Respondents on the Lease program *versus* those not on the program



1=strongly agree 2=Agree 3=undecided 4=disagree 5=Strongly disagree

KEY

Red Bars= Attitudes towards wildlife: respondents **not on** the lease programme

Blue Bars= Attitudes towards wildlife: Respondents **on** the lease programme

NO. 2 Wildlife conservation is important to Society

NO. 4 Area be left open without benefits

NO. 6 Livestock and wildlife to share water and pastures

NO. 8 Government to plough back revenue from the Park to dispersal area

NO. 12 Lease program an adequate method for saving wildlife outside the Park

NO. 14 Fenced Nairobi National Park would be more beneficial

There is a weak relationship between being on the Lease Program and rejecting statement number five (All landowners should fence their land to keep away wildlife). The strong disagreement with the statement is attributable to the fact that those behind it were beneficiaries of direct benefits from the Lease Program.

The same weak relationship can be seen for statement N0. 9 (The government's methods of conflict resolution were fair). Both groups-those on the Lease program as well as those not on it were in agreement regarding this statement. They strongly disagreed. There was also a significant relationship between being on the lease program and strongly agreeing that "the Lease program was an adequate method for saving wildlife outside the protected area".

4.17.2 Benefit sharing and the norm of reciprocity

In the social exchange theory Peter Blau and George Homans state that people will strive to reciprocate either positively or negatively because it is in their own interest that the positive (and beneficial) aspects be encouraged and the negative ones discouraged. If wildlife conservation is beneficial to people, they will endeavour to protect wildlife just like they protect domestic animals for their own benefit. On the other hand, they will destroy it or encourage its destruction if it is seen as a cost or liability to them.

5 CHAPTER FIVE

5.1 Conclusions, Recommendations and suggestions for further research

5.1.1 Conclusions

1. This study found out that landowners joined the lease program regardless of the size of their land. The range of land held by those on the program fell between 13 acres and 1,216 acres.
2. The distances from the tarmac road, shopping centres or the Nairobi National Park were not found to be an impeding factor for one to join the Wildlife Conservation Lease Program. However, land that was closest to the three areas was reported (by officers working on the program) to be less available than land farther away.
3. The cultural background of the Maasai was found to be an influencing factor in favour of wildlife conservation especially respect for wildlife and attitude toward eating game meat. The fact that most of the people did not eat game meat except in times of acute shortage of food was an important and unique strength of the local people that enhanced wildlife conservation.
4. Landowners with both small and large herds of livestock had also joined the program. The issue of livestock or other kind of wealth was not found to be an impediment to joining the Lease program.
5. The Lease program was found to have had a positive and significant influence on the participants' attitudes towards wildlife, mainly due to the direct benefits they were getting in return for wildlife protection on their land. This conclusion lent support to the Social exchange theory and particularly the norm of reciprocity.

5.2 Recommendations

Based on the findings of this study, the following are the recommendations:

1. Deliberate measures should be put in place to curb the wanton sub-division of land into unviable parcels in the Kitengela area. The government should check the spread of these settlements by zoning the area. Conservation organisations should be given the option of buying the small plots and consolidating them for use by wildlife and livestock. The local leaders and the people of Kitengela (mainly through the Kitengela Ilparakuo Landowners Association) may lobby the government to zone the area as a livestock and wildlife area with minimum cultivation (for subsistence). In return, the landowners should benefit from the presence of wildlife on their land. Other areas in the second triangle should be encouraged to form landowners associations to co-ordinate the activities of their respective regions.
2. Programs that enhance livestock keeping should be encouraged and supported to ensure profitability and to dissuade people from engaging in short-cut methods of fighting poverty regardless of their negative effects on the environment and sustainability.
3. Support for and the expansion of the lease program to cover more landowners including those in the wildebeest calving areas of Empuyiankat, Lenchani, Illassit, and Enkirrgirri areas. Along with this measure, land should be purchased (though mutual agreement with the landowners) across the Namanga tarmac road (as apriority). Those not willing to sell should be asked to join the Lease program. The government (though KWS) should seriously consider sharing some revenue from Nairobi National Park with the landowners in the dispersal area to encourage conservation as an alternative source of income.
4. The duration of the Lease contract should be increased to at least two years with the future possibility of extending it to five years for better planning.

5. A program to take care of predators so as to limit the number of livestock killed to be put in place. Coupled with that, community scouts (transparently sourced from the area should be trained employed to reinforce wildlife protection outside the protected area.
6. Efforts by the landowners Association to utilize for eco-tourism purposes the Kitengela swamp and the Monchiriri valley should be supported. The association should be empowered so as to competently handle a broad range of conservation and development issues with the support of the majority of the landowners. More tourist facilities should be encouraged and developed in the wildebeest calving zone.
7. The District Commissioner should cease to become the chairman of the Land Board. The chair and the board members should comprise educated local people of outstanding integrity. The board should ensure that activities that jeopardized livestock keeping (and by extension the Maasai people) should be checked.

5.3 Suggestions for further research

A wider study including more landowners on the Lease program and others not on it (especially in the second triangle to the south east) should be carried out to assess potential for wildlife conservation and find out specific areas of importance. Further, the actual movement of wildebeest to and from Amboseli National Park should be verified.

An in-depth study of those on the lease program to ascertain how much the benefits were translating into actual protection of wildlife and then attempting a comparison of attitudes in another site (different Protected area).

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7 APPENDICES

Appendix I: Interview Schedule

Introduction

The following sets of questions are aimed at gathering information about landowners' views regarding wildlife in the Kitengela Wildlife Dispersal Area and more particularly about the Wildlife Conservation Lease programme initiated by FoNNaP in 2000. Please answer the questions as accurately as possible.

Background information

Respondent's personal details

Name _____Division _____

Location _____Sub-location _____

Date of interview _____ Name of Enumerator _____

Age: _____ yrs

Gender: _____ (1 = male, 2 = female)

Marital status _____ (1 = single, 2 = married, 3 = widowed/widower)

Years of formal education _____

Number of dependants

Category of dependants	Number	
Children below school age		
Children in primary school		
Children in secondary school		
Dependants in colleges/ university		
Those unemployed and staying at home		
Dependants living elsewhere		

Occupation:

(i) Self:

Present---------- Immediate Past----------

(ii) Spouse

Present---------- Immediate past----------

2. Land ownership and location

Do you own land in the dispersal area? _____ (1 = Yes, 2 = No)

If yes, what is the acreage of your land _____ acres.

What is the price of land here/acre? Ksh. _____

How have the land prices been since January 200? (1 = increasing, 2 = stable, decreasing)

_____

Distance from tarmac road, shopping centre and National Park

(a)What is the distance between your land and:

The tarmac _____kms

Nairobi National Park _____ kms

Shopping centre (state) _____ kms

(b)Do you own land elsewhere? _____ 1=Yes, 2=No. If yes how much? _____ acres

4. Livestock ownership, composition and grazing

Please give the following information about your livestock.

	December 2002	At end of 2000 drought
(b) No of cattle (Total herd size)	_____	_____
Bulls	_____	_____
Steers & oxen	_____	_____
Cows	_____	_____

0 – 2 yrs calves _____ _____

How many died of starvation during the 2000 drought? :

Cattle_____

Shoats _____

(d) Did you move your cattle during the last drought (2000)? (1 = Yes 2 = No)--------

If yes, were you better off than those who did not move? (1 = Yes, 2 = No)-------

If No, were you better off than those who moved? (1 = Yes, 2 = No)

Why do you think so?_____

Has your livestock husbandry been affected by the reduction of grazing space in this area? If yes, how? _____ If no, why? _____

What do you think are the main hindrances to livestock movement in this area?

(i)_____

(ii)_____

(iii)_____

How much land do you hope to fence in the next 2 years? _____ acres , 5 years_____ acres?

5. Wildlife issues

How can you rate the current status of wildlife numbers in this are in the last five years? (1=increased, 2=decreased, 3=static)

	Decreased	Static	Increased	Why?
Wildebeest				
Zebra				
Eland				
Giraffe				
Kongoni				

Other (specify)_____

How do you think the negative changes can be dealt with?

_____

Are you aware of any poaching taking place in this area? _____ (1 = Yes, 2 = No)

If yes, who do you think is mainly behind the poaching? (1 local residents, 2 = outsiders)_____

What species of animals are, according to you, most threatened by poaching? _____ (1 = Wildebeest, 2= Zebra, 3 = Giraffe, 4 = Gazelles, 5 = other (specify _____)

Why do you think the animal species in (2) above is facing the greatest threat? _____ (1 = disease related, 2 = palatability of its meat, 3 = weakness/vulnerable defence mechanism)

Do you think poaching would reduce if all the landowners in this area either joined the lease programme or benefited in any other way? _____ (1= Yes, 2 = No) If yes, why?_____

If no, why?_____

Why else do you think poaching is taking place in this area?

_____ _____

What should be done to curb poaching in this area? _____ (1 = introduce community scouts, 2 = involve KWS Rangers more, 3 = other – specify)

What do you think would be the single most important incentive for community wildlife conservation in this area? 1=Revenue sharing; 2= Compensation for losses; 3= increased security for wildlife

6. Participation in Lease program

Are you on the Wildlife Conservation Lease Programme?_____ (1 = Yes, 2 = No)

If yes when did you join? _____(1 = 2000, 2 = 2001, 3= 2002)

How much of your land is under lease?----------(acres).

How much money did you receive in 2000--------, 2001---------, 2002----------(in KSh)

What do you consider to be the two most important benefits of joining the Lease Programme? _____ (1 = school fees, 2 = no more land sales, 3 = other specify

What do you think about the lease contract duration i.e. 1 year? (1 = enough, 2 = should be increased to 2 yrs, 3 = should be increased to 5 yrs, 4 = should be reduced to six months, 5 = other (specify) _____

Why did you decide to join the Lease Programme? _____

Which are some of the requirements you have been adhering to since you joined the lease program? _____

(i) What problems are you experiencing as a member of the lease program? _____

What suggestions do you have as possible solutions to these problems? _____

7. Cultural Issues

Please fill the following table regarding your change of attitude toward game meat in the last ten years. (1 = ate/eat, 2 = did not eat/do not eat)

Animal	**10 years ago**	**Presently (2003)**
Zebra/Oloitiko		
Wildebeest/Oinkat		
Giraffe/Olmeut		
Eland/Osirua		
Gazelles/Inkoiliin		
Impala/Enkalubo		
Hertebeest/Orkon'di		
Ostrich/Esidai		
Water Buck/Osiram		

What can you say about the following cultural practices related to wildlife hunting? (1 = fully in practice 2 = partially practiced, 3 = no longer practiced)

Warriors hunting lions to show bravery (Olamayio) _____

Young men killing a lion (s) whenever it kills a cow (s) _____

(iii) Killing of birds to adorn circumcision initiates (Illaibartak)

8. General attitudes towards Wildlife

Please indicate your feelings regarding wildlife and its conservation in your area as follows:1: strongly agree 2: Agree 3: undecided 4: Disagree 5: strongly disagree

	1	2	3	4	5
In this area wildlife is important to you					
Wildlife conservation is important to society and future generations					
This area should be left open for both livestock and wildlife if there are benefits Even without benefits to the community					
All landowners should fence their land to keep away wildlife					
Livestock and wildlife should be left to share basic resources like water and pastures					
Development of tourism related activities should be encouraged in this area					
The government should plough back some of the revenue from the Nairobi park in this area					
Government policy on resolution of human-wildlife conflict is fair					
Government policy on revenue sharing with communities is fair					
KWS' conflict minimisation methods are adequate					
Wildlife conservation Lease program a sustainable method for saving wildlife in this area					

Appendix II: List of Respondents

Not on Lease Programme-Control Group				On Lease Programme-Intervention Group			
	NAMES	Q#	EN		NAMES	Q#	EN
1	Tenda Kima	2	JM	49	Daama Keponyi Suyianka	1	JM
2	Joseph Moyiae	3	JM	50	Rhonest Ntayia	99	SM
3	Jonathan Maseine	4	JM	51	Rugard Makui	98	SM
4	Joseph Sampong	5	JM	52	Nakae Mula	94	SM
5	Kometa Katoru	7	JM	53	Sankuyan Simingor	93	SM
6	Kanampa katoru	8	JM	54	Stephen Simingor	92	SM
7	Mungai Kasio	9	JM	55	Sekenet Mula	91	SM
8	Philip Keponyi	11	JM	56	Musomba Keton	89	SM
9	Masiar Ntutu	13	JM	57	Ntayia	88	SM
10	Wilson Kaesha Maisia	14	JM	58	Lepatei Rapaine	87	SM
11	Joseph Maisia	15	JM	59	Seti Sanchiro	85	SM
12	Lesailol Sapon'gu	16	JM	60	Tatae Isina	84	SM
13	Mama Njeri	19	JM	61	Mako Busabus	83	SM
14	Julius Nchiwaine	20	JM	62	Kakenyua Simikor	81	SM
15	David Pasha	21	JM	63	Jonathan Kiliman	76	SS
16	Parmereta Shung'eya	22	JR	64	Meitiaki Musonko	77	SS
17	Terta Keeja	23	JR	65	Sawani Moinami	75	SS
18	Samuel Tipatet	24	JR	66	Akwala Solonka	74	SS
19	Jonathan Patita	26	JR	67	Nanteyian Leparakuo	72	SS
20	Parsaurei Mapi	27	JR	68	Geoffrey Maseri	71	SS
21	Jason Tipatet Munchu	28	JR	69	Kipoket Sakoyo	69	SS
22	Moses Katara	29	JR	70	Mashulu Isa	68	SS
23	Abraham Kang'o	30	JR	71	Backson Mutunkei	66	SS
24	Kulankash Tuala	32	JR	72	Karei Waweru	65	SS
25	Philip Kulangash	33	JR	73	Teresia Nanapu	61	SS
26	Jackson Kisemei	38	JR	74	Jackson Solonka	60	SS
27	Francis Pasha	40	JR	75	John Mutunkei	59	WN
28	Mako Kompe Parmeres	41	WN	76	Sambo Romo	58	WN
29	David Tarayia	42	WN	77	Parmisa Semei	56	WN
30	Francis Kaesha	43	WN	78	Richard Nkaanki	54	WN
31	Jackson Kaesha	51	WN	79	Nicholas Matiko	53	WN
32	Leparon D. Kirayian	52	WN	80	Ntiamasas Moshiri	50	WN
33	Simon Mutunkei	55	WN	81	Peter Waitito	49	WN
34	Mama Njeri	57	WN	82	Elizabeth Sunkura	48	WN
35	Mako Kashimo	62	SS	83	Regina Muko	47	WN
36	Sepekua Kipaiwua	63	SS	84	Pisoi Piyiai	46	WN
37	Tobiko Sakoyo	64	SS	85	Samuel Morinke	45	WN
38	Semenkurr Mutunkei	67	SS	86	Grace M. Kamia	44	WN
39	Lesire Mutunkei Lamo	70	SS	87	Marush Kisemei	39	JR
40	Shirim Ng'eenoi	73	SS	88	William Kitaiwua	37	JR
41	Francis Sepekua	78	SS	89	Esther Toiran	36	JR
42	David N'dilai	79	SS	90	Teresia Swakei	35	JR
43	Joseph Taany	80	SM	91	Lantei Nkoyia	34	JR
44	Nasuka	82	SM	92	Sipatoi Romo	31	JR
45	David Kerema	86	SM	93	Stanley Kaputi	25	JR
46	Moses Mula	90	SM	94	Sapai Juma	18	JM
47	Jackson Mula	95	SM	95	Milaing'ot Keeja	17	JM
48	Daniel Mula	96	SM	96	Joseph Matanta	12	JM
		97	SM	97	Sompiroi Katimo	10	JM
				98	David Nkedianye	100	JM
				99	Samuel Malei	6	JM
				100	Matayia Leina	67	SS

ppendix III: T-Tests

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Age of respondents	Equal variances assumed	2.626	.108	-1.013	98	.313	-2.96	2.918	-8.747	2.833
	Equal variances not assumed			-1.005	90.454	.318	-2.96	2.942	-8.802	2.889
Level of education	Equal variances assumed	.094	.760	-.167	98	.867	-.19	1.154	-2.484	2.097
	Equal variances not assumed			-.168	97.956	.867	-.19	1.149	-2.474	2.088
Children below school age	Equal variances assumed	.775	.381	.072	98	.943	.0176	.24506	-.46869	.50395
	Equal variances not assumed			.072	97.997	.943	.0176	.24432	-.46722	.50248
Children in primary	Equal variances assumed	.000	.998	-.633	98	.528	-.3317	.52426	-1.372	.70864
	Equal variances not assumed			-.629	93.518	.531	-.3317	.52721	-1.379	.71512
Children in secondary	Equal variances assumed	5.002	.028	-2.944	98	.004	-.6907	.23462	-1.156	-.22510
	Equal variances not assumed			-2.970	96.115	.004	-.6907	.23256	-1.152	-.22909
Dependants in colleges/univer sity	Equal variances assumed	17.665	.000	-2.187	98	.031	-.2212	.10114	-.42185	-.02045
	Equal variances not assumed			-2.221	89.350	.029	-.2212	.09957	-.41898	-.02332
Unemployed and staying at home	Equal variances assumed	.046	.831	-1.488	98	.140	-.4199	.28223	-.97995	.14020
	Equal variances not assumed			-1.480	93.946	.142	-.4199	.28369	-.98315	.14340
Dependant living elsewhere	Equal variances assumed	5.381	.022	-1.189	98	.237	-.3029	.25465	-.80823	.20246
	Equal variances not assumed			-1.222	71.501	.226	-.3029	.24783	-.79699	.19122
Landsize	Equal variances assumed	2.283	.134	-2.170	96	.032	-73.2233	33.74682	-140.2	-6.236
	Equal variances not assumed			-2.193	77.416	.031	-73.2233	33.38305	-139.7	-6.755

T-Test

Group Statistics

	Wildlife Conservation Lease Programme	N	Mean	Std. Deviation	Std. Error Mean
Distance from tarmac road	No	48	9.6375	5.04544	.72825
	Yes	52	8.5115	5.58723	.77481
Distance from Nairobi National Park	No	48	10.07	8.59242	1.24021
	Yes	52	14.16	9.80682	1.35996
Distance from shoping centre	No	48	11.60	3.92341	.56630
	Yes	51	12.30	4.33945	.60764

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Distance from tarmac road	Equal variances assumed	.980	.325	1.055	98	.294	1.1260	1.06771	-.99287	3.24479
	Equal variances not assumed			1.059	97.956	.292	1.1260	1.06333	-.98419	3.23612
Distance from Nairobi National Park	Equal variances assumed	4.235	.042	-2.211	98	.029	-4.0905	1.85035	-7.76250	-.41859
	Equal variances not assumed			-2.222	97.744	.029	-4.0905	1.84055	-7.74317	-.43792
Distance from shoping centre	Equal variances assumed	.585	.446	-.840	97	.403	-.6998	.83317	-2.35337	.95386
	Equal variances not assumed			-.842	96.849	.402	-.6998	.83062	-2.34833	.94882

T-Test

Group Statistics

	Wildlife Conservation Lease Programme	N	Mean	Std. Deviation	Std. Error Mean
Statement No1	No	48	2.10	1.387	.200
	Yes	52	2.48	1.651	.229
Statement No2	No	48	1.88	1.178	.170
	Yes	52	2.29	1.433	.199
Statement No3	No	48	1.69	1.075	.155
	Yes	51	2.00	1.296	.181
Statement No4	No	47	3.94	1.374	.200
	Yes	52	3.83	1.581	.219
Statement No5	No	47	3.87	1.541	.225
	Yes	52	3.88	1.395	.194
Statement No6	No	48	2.08	1.028	.148
	Yes	52	2.46	1.290	.179
Statement No7	No	47	1.62	1.012	.148
	Yes	51	1.73	.981	.137
Statement No8	No	46	1.59	1.257	.185
	Yes	52	1.48	1.146	.159
Statement No9	No	47	4.38	.822	.120
	Yes	52	4.21	1.304	.181
Statement No10	No	47	4.68	.556	.081
	Yes	49	4.71	.842	.120
Statement No11	No	48	4.46	.988	.143
	Yes	52	4.42	.871	.121
Statement No12	No	48	1.94	1.099	.159
	Yes	52	2.38	1.331	.185
Statement No13	No	47	3.23	1.722	.251
	Yes	52	3.73	1.622	.225
Statement No14	No	47	4.19	1.279	.187
	Yes	52	4.17	1.424	.197

Cross tabs

Have you fenced any land? * Wildlife Conservation Lease Programme Crosstabulation

			Wildlife Conservation Lease Programme		
			No	Yes	Total
Have you fenced any land?	No	Count	30	31	61
		% within Have you fenced any land?	49.2%	50.8%	100.0%
		% within Wildlife Conservation Lease Programme	62.5%	59.6%	61.0%
		% of Total	30.0%	31.0%	61.0%
	Yes	Count	18	21	39
		% within Have you fenced any land?	46.2%	53.8%	100.0%
		% within Wildlife Conservation Lease Programme	37.5%	40.4%	39.0%
		% of Total	18.0%	21.0%	39.0%
Total		Count	48	52	100
		% within Have you fenced any land?	48.0%	52.0%	100.0%
		% within Wildlife Conservation Lease Programme	100.0%	100.0%	100.0%
		% of Total	48.0%	52.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.087[b]	1	.768		
Continuity Correction[a]	.008	1	.928		
Likelihood Ratio	.087	1	.768		
Fisher's Exact Test				.839	.464
Linear-by-Linear Association	.086	1	.769		
N of Valid Cases	100				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.72.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.030	.100	.293	.770[c]
Ordinal by Ordinal	Spearman Correlation	.030	.100	.293	.770[c]
N of Valid Cases		100			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

The relationship is not significant

Crosstabs

Planning to sell land in the next 2yrs * Wildlife Conservation Lease Programme Crosstabulation

			Wildlife Conservation Lease Programme		
			No	Yes	Total
Planning to sell land in the next 2yrs	No	Count	29	37	66
		% within Planning to sell land in the next 2yrs	43.9%	56.1%	100.0%
		% within Wildlife Conservation Lease Programme	60.4%	71.2%	66.0%
		% of Total	29.0%	37.0%	66.0%
	Yes	Count	19	15	34
		% within Planning to sell land in the next 2yrs	55.9%	44.1%	100.0%
		% within Wildlife Conservation Lease Programme	39.6%	28.8%	34.0%
		% of Total	19.0%	15.0%	34.0%
Total		Count	48	52	100
		% within Planning to sell land in the next 2yrs	48.0%	52.0%	100.0%
		% within Wildlife Conservation Lease Programme	100.0%	100.0%	100.0%
		% of Total	48.0%	52.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.282[b]	1	.257		
Continuity Correction[a]	.848	1	.357		
Likelihood Ratio	1.284	1	.257		
Fisher's Exact Test				.295	.179
Linear-by-Linear Association	1.270	1	.260		
N of Valid Cases	100				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.32.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.113	.099	-1.128	.262[c]
Ordinal by Ordinal	Spearman Correlation	-.113	.099	-1.128	.262[c]
N of Valid Cases		100			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

The relationship is not significant