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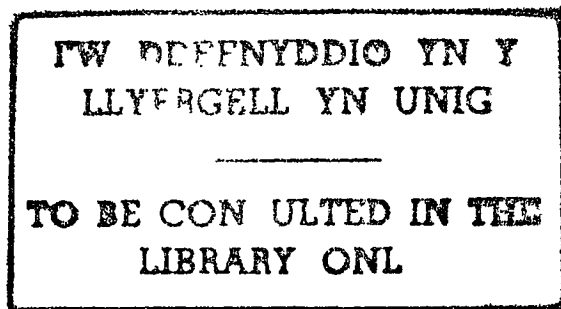
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**CONSERVATION AND ECOTOURISM IN KIBALE NATIONAL PARK,
UGANDA**

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Thesis Submitted in Candidature for the Degree of Philosophiae Doctor in the
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School of Agricultural and Forest Sciences

University of Wales, Bangor

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ABSTRACT

The aim of this study was to assess the potential of ecotourism in Kibale National Park, the environmental impact of visitor activities, the characteristics of visitors and visits, the perception and attitudes of local communities towards conservation and development of ecotourism, and the status of environmental interpretation in Uganda. The environmental evaluation was attempted using a combination of methods developed in the USA. Self-completion questionnaires were used to obtain information on visitors and the characteristics of visits, and direct household interviews were used for the survey of local communities' perception and attitudes. Information on the status of environmental interpretation was sought using the postal-survey method.

It was found that Kibale National Park has the potential for development of ecotourism. The number of visitors has been rising annually since ecotourism was introduced in 1992 and was estimated to reach 5 000 in 1995. As a result of the continuing increase in visitor numbers, the camping sites and the nature trails are already being degraded. More than 90 per cent of the visitors come from overseas and only a small proportion are Ugandans. The visitors come on pre-planned tour packages mainly to view the chimpanzees. The common feeling among the visitors is that the facilities and services currently offered in Kibale are of low standard. Several proposals have been put forward for improvement of services and provision of additional facilities. The need to control visitor numbers and to maintain a sound environment in the Park has been discussed and immediate management measures required to reduce further deterioration of the camping sites and the nature trails have been recommended.

The study has also revealed that local communities in Kibale still obtain most of their forest products from the Park. Although the majority (about 80%) support conservation and development of ecotourism, they have a poor perception of the Park's existence and value. Eviction of some families from the Park a few years ago and the gradual loss of traditional rights of access and use of resources following the establishment of Kibale as a National Park, has resulted in negative attitudes among some sections of the local communities. It is recommended that local communities should be educated about the value of the Park and the importance of conserving its resources. Moreover, there is a need to involve them directly in all the stages of future planning and management of conservation programmes and ecotourism development in Uganda's protected areas.

It has also become clear that the concept of environmental interpretation is little understood in Uganda and the practice is generally poor. It was found that Kibale and other national parks lack facilities for proper interpretation. The Park ranger-guides are often employed and assigned to interpretive work without prior training on interpretation. It is recommended that all national parks and other protected areas where ecotourism is being promoted alongside conservation should set up proper environmental interpretation systems. In addition, there is a need for establishing a national programme of environmental interpretation to facilitate environmental education and development of ecotourism in Uganda.

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CHAPTER 1

INTRODUCTION

1.1 General Background

Conservation is a much used term and the concept has often been associated with the provision of national parks, game reserves and protection of wildlife (Areola, 1989). Over the last century, one of the major features of conservation has been the recognition that man is a significant agent in natural environment alteration. Since then, the concept has evolved and has been aimed at protecting the environmental resources from human activities. Conservation and utilisation of resources directly relate to the processes of planning, organisation and control (McCracken, 1989). In recent years, several studies have been conducted in order to provide information that can be used directly or indirectly for planning, management and conservation of the natural environment (see e.g. Pottinger and Burley, 1992). At the same time, various conservation programmes have been developed and elaborate systems of protected areas established. There are several categories of protected areas and the national park is one of them (IUCN, 1992c).

According to Nepal and Weber (1995), national parks in developing countries were established at the beginning of the second quarter of this century. In East Africa, Lado (1992) has reported that national parks were established out of the need to conserve wildlife. He further noted that conservation of wildlife resources was first officially expressed in the British East Africa Company's Sporting Licences Regulation in 1884 which dealt mainly with hunting restrictions. Several years later, various management strategies and innovations were developed resulting in the establishment of wildlife sanctuaries and game reserves. Numerous reports (e.g. Hart, 1966; Lindsay,

1989 and Anderson, 1989) suggest that decisions on conservation at the time were taken without consulting the local people and their opinions were not sought. The complex patterns of natural resource utilisation practised by the local communities were not adequately understood and instead were singled out for eradication. This caused management problems that led to conflicts over the use of resources in the national parks and game reserves. Though traditional systems of land use were the major management problem, the conflicts also demonstrated the apparent lack of concern for the local communities whose lands were appropriated for the establishment of the wildlife sanctuaries and game reserves. From that time, the notion that identified conservation with the protection of wildlife species and habitats has given way to a broader discussion linking conservation to the process of rural development. Tourism was gradually developed in the national parks (Ouma, 1970) and today it is widely recognised as a means by which rural development can be achieved.

According to Witt *et. al.* (1991) and Goodwin (1996), tourism has grown to be one of the world's largest industries second only to oil. At the same time, interest in the environment has increased and has resulted in the development of ecotourism as a variant of tourism. There is much literature now available on tourism, but a recent report by Goodwin (1996) describes it as "a powerful economic system, commercially driven and increasingly impacting on the ecosystems of some of the world's protected areas". Given the rapid growth in this sector, it is expected that several protected areas will experience increasing numbers of tourists which will, in turn, present substantial challenges to protected area managers.

In Uganda, tourism is one of the fastest growing sectors of the economy with an annual average growth rate of 18 per cent over the past three years (Ministry of Finance and Economic Planning, 1995). Tourist arrivals increased by 10.3 per cent from 29 683 in 1991 to 32 859 in 1992. For the period 1993 to 1994 tourist arrivals increased by 30

per cent from 45 472 to 61 052. These increases have been attributed to several factors including:

- the government's decision to abolish visa requirements for a number of countries,
- the establishment of more accommodation facilities,
- the consolidation of peace and stability since 1986,
- the liberalisation of the economy,
- improvement in the road network and wildlife conservation areas,
- the launching of the tourism master plan and introduction of ecotourism in protected areas,
- the resumption of several international flights into the country, and
- the creation of Uganda Tourist Board to facilitate marketing of the country's tourist attractions abroad (Ministry of Finance and Economic Planning, 1995).

Globally, tourism in many protected areas has emerged as a development strategy and ecotourism in particular has been identified as a viable option for achieving sustainable development (Cater, 1991). Several reasons have been given for this and it is widely believed that ecotourism can generate revenue that may be re-invested in protected areas to facilitate conservation. In addition, the funds generated may be used to support local development projects which in many ways indirectly complement the conservation of biodiversity.

Based on these principles, several initiatives have been undertaken lately to implement projects that would enable local economic development while maintaining conservation objectives. Some of the projects have involved the introduction of ecotourism as a major economic activity aimed at providing funds for protected area management and to extend the economic benefits to local communities (Goodwin, 1996). As a result, complex relationships have developed between ecotourism, protected

areas and local communities. The introduction of ecotourism in protected areas has also led to a shift in protected area management strategies towards integrated development. Several Integrated Conservation and Development Projects (ICDPs) have so far been established in many protected areas in developing countries. It seems therefore that, for the foreseeable future, ecotourism will present a means by which protected area managers will seek to increase the economic values of protected areas and to offer sustainable opportunities for local people in terms of economic development.

The relationship between tourism and protected areas has a long history. Tourism is wholly or partly based on values derived from nature and its resources, and so it has often been used to justify the establishment of national parks economically. As noted by Mackinnon *et. al.* (1986), tourism potential is an important factor in the selection of protected areas. This subject was discussed during the 1992 IVth World Congress on National Parks and Protected Areas (see Goodwin, 1996) where it became increasingly clear that tourism in protected areas must be developed with the primary goal of maintaining ecosystem integrity, conserving biodiversity, increasing public awareness, and enhancing local peoples' quality of life (Goodwin, 1992).

Uganda is in the process of developing an environmental policy geared towards protecting the environment and conserving biological diversity. For several years, the country's natural environment has been under threat from expanding human populations and land pressures. The situation became more worrying because much of the biodiversity is found in natural forests (Department of Environment, 1992) which, in the past few years, have undergone serious degradation by agricultural encroachment and commercial logging, both legal and illegal (Howard, 1991). The conversion of some of the forest reserves, richly endowed with biodiversity, into national parks recently has been one of the most practical conservation initiatives undertaken. Kibale was one of the

first natural forest reserves to be made a national park and the first to implement an ecotourism programme.

The success of ecotourism in Uganda will not only depend on the protection of the natural environment and the biological resources, but also on the co-operation and participation of local communities in both the conservation and management of the resources. All these, however, will depend on how effectively the local communities are educated about the value of protecting the natural environment and the resources.

In order to achieve the long-term benefits of conservation and ecotourism, appropriate planning and management based on sufficient information is essential. In this respect, sufficient information is required on the ecotourists, the level of visits, the magnitude of environmental impact, and how the use of resources from the protected areas by local communities is integrated with conservation. Moreover, there is a need to understand the perceptions and attitudes of the local communities towards conservation and ecotourism. Positive community attitudes are important as they help to create a favourable atmosphere for local participation in conservation and management of protected areas. Although all this information is essential for planning and management purposes, much of it is lacking for most of the protected areas in Uganda. It was, therefore, felt necessary to carry out a study in Kibale with the broad aim of providing information that can be used in the planning and management of the Park. The same information may also be used for setting up guidelines for the planning and management of other national parks and protected areas where ecotourism is being promoted alongside conservation.

The need to establish an environmental interpretation system in Uganda provided a further impetus for carrying out an additional study of the status of interpretation. It was felt that a well established environmental interpretation system in Uganda's

protected areas was necessary in order to facilitate environmental and conservation education, while at the same time enhancing visitors' experiences and satisfaction. Before such a programme can be set up, some basic information is needed about the people involved in interpretation work, the facilities available, and those required. This information can only be obtained through a well-planned and properly executed survey. In planning the entire study, several questions were asked and hypotheses formulated. Attempts were made to obtain answers to the questions and to test the hypotheses with the overall aim of fulfilling the specific objectives of the study as stated in the next subsection.

1.2 The Scope and Objectives of the Study

The study comprised four major parts namely, an environmental evaluation of Kibale National Park, visitor survey, local survey, and appraisal of the status of environmental interpretation in Uganda. The specific objectives were:

- to assess the potential of ecotourism in Kibale National Park, current recreation use and the environmental impact,
- to assess the perception and attitudes of local people towards conservation and ecotourism development in Kibale, and
- to determine the status of environmental interpretation in Kibale and other selected National Parks with a view to recommending the establishment of a National Programme for Environmental Interpretation in Uganda.

1.3 Thesis Structure

This thesis is divided into nine chapters. In the present chapter, general background to conservation and ecotourism is given together with the justification and

objectives of the study. In Chapter 2, a summary of the discussion of forestry in Uganda is given. The discussion puts together valuable information about the development of forestry in Uganda and examines the concept of forest biodiversity conservation and how it has led to the rise of forest ecotourism. Chapter 3 comprises a broad overview of the information available in literature on forest recreation, ecotourism, conservation and environmental interpretation. The methods and problems of assessing recreation and ecotourism potential of protected areas, recreational use and environmental impact are presented in Chapter 4. The environmental evaluation of Kibale National Park is given in Chapter 5, and the findings on the visitor survey are summarised in Chapter 6. The local survey is presented in Chapter 7 and the status of environmental interpretation is given in Chapter 8. The thesis ends with a general discussion, conclusions and recommendations, all of which are presented in Chapter 9. It is important, however, to point out from the outset that although Kibale is a national park, it has been referred to many times as a forest throughout the discussion in the thesis for the reasons already given in sub-section 1.1.

1.4 Conclusions

Tourism has gained recognition as one of the primary strategies for environmentally benign development and it is in this context that ecotourism will be promoted in Uganda's protected areas. Though a relatively new practice, the success of ecotourism will depend on how it is planned and managed. The best current prospects are that ecotourism will continue to grow alongside conservation. But continuous acquisition of information on various aspects such as the visitor characteristics, park resource use, and local community participation in conservation and ecotourism management will have to be provided to facilitate the planning process and management. Tourism in Uganda has developed around its wildlife resources and this trend is likely to continue so long as conservation remains a priority in the management of national parks

and protected areas in general. Conservation of wildlife, therefore, remains a critical factor in the future development of ecotourism in protected areas. It is expected that the most visited wildlife areas will be the national parks and the new category of forest national parks which, if managed properly, should be able to meet the increasing demand for forest ecotourism. In view of this, adequate measures will have to be taken to cope with the increase in number of visitors and the demand for facilities. Proper planning and management of the parks and the visitors will therefore be essential.

As the number of visitors and the level of visits increase, greater pressure will be exerted on the parks. The number of visitors will therefore have to be controlled and the environmental impact monitored regularly. In this respect, environmental interpretation will be a valuable tool in helping to minimise the level of environmental impact. This does not, of course, decry the importance of involving local communities. Local participation will remain a key issue in the conservation of resources and management of ecotourism. As the first major study on conservation and ecotourism in Uganda, the findings presented in this thesis should serve to demonstrate that research in this field is possible and should therefore stimulate interest in further research in the other protected areas where ecotourism is being promoted alongside conservation.

CHAPTER 2

FOREST RESOURCES IN UGANDA

2.1 Introduction

Gazetted forests in Uganda have their origins in 1898 when the first ever specialised organ of government, the "Scientific and Forestry Department" was established as Uganda became a British colony. In 1900 the British Protectorate government signed an agreement with the authorities of the ancient kingdoms of Buganda, Toro, and Ankole whereby all forest land became the property of the Protectorate government. Unfortunately, no formal reservation and demarcation of the forest estate was undertaken until 1932. In Buganda, for instance, the Agreement of 1900 stipulated that 1500 square miles (390 000 ha) of forest would come under Protectorate government, yet only 504 square miles (130 000 ha) were finally gazetted (Forest Department, 1951).

Most of the country's principal forest reserves were formally gazetted in 1932 as undemarcated crown forests, totalling 365 000 ha. It took a further two decades before the boundaries, more or less as they are today, were finally consolidated. During this period a large number of additional smaller areas were gazetted as Local Forest Reserves, under district administrations, in order to cater for local demands. These were later brought under centralised Forest Department control in 1967 (Hamilton, 1984). Today the gazetted forest land, most of which lies in the west of the country, consists of the closed Tropical High Forest (THF), savanna woodlands and bamboo/heath-moorland/grassland (Department of Environment, 1994).

Over 14 000 ha of savanna woodland has been planted with exotic softwoods and there are about 36 000 ha of mainly privately owned eucalyptus woodlots. Over 160 000

ha of the reserved THF is devoted to protection on steep slopes, nature, hill ranges, and important catchment areas. Recent studies seem to indicate that about 250 000 ha (out of 540 000 ha ear-marked for commercial harvesting) of the THF are amenable to sustainable and economically viable extraction of timber (Howard, 1991). From the total forest land, about 2 600 ha are under dual control as both game reserves/forest reserves and about 2 000 ha as national park. Gazetted forest land is estimated to cover about seven per cent of the total land area.

In the last 20 years, the THF have experienced excessive pressure, erosion, and recession of their frontiers as a result of agricultural encroachment; prolific tree felling for timber, charcoal and firewood; clearing for tsetse fly eradication; and high concentrations of elephant populations in some areas (Struhsaker, 1987; Tabor *et. al.*, 1990; Howard, 1991). As a result, it is estimated that over five percent of the original forest cover has been lost (Eltringham and Malpas, 1993). A detailed review of deforestation in Uganda by Hamilton (1984) shows that reserved THF covers only three per cent of Uganda's land surface, whilst seven per cent is gazetted for forestry use (Department of Environment, 1994).

2.2 Country Setting

Uganda is a rather small landlocked country lying astride the equator in east-central Africa. It occupies about 236 000 sq. km of the central African plateau, north of Lake Victoria, between Zaire in the west, Kenya in the east, the Sudan in the north, and Rwanda and Tanzania in the south (Kamugisha, 1992).

The central part of the country is characterised by a gentle topography of flat-topped hills and broad, often swampy, valleys lying at an altitude of 1 000 - 1 500 m above sea level. More spectacular scenery is to be found in the west where the landscape is

dominated by the Rift Valley and its associated mountains and lakes; and in the east where the international border follows a line of raised land associated with the large Miocene volcanoes of Mounts Elgon, Kadam, and Moroto (Department of Environment, 1992).

Most of Uganda lies on very ancient sandy- clay, loamy soils. These are reasonably fertile, although they represent one of the final stages in tropical weathering and possess little or no reserve of weathered minerals. Some better soils (ferrisols, lithosols and eutrophic soils), richer in plant nutrients and with a higher reserve of weatherable minerals, are associated with the more recent landforms along the Western Rift, and volcanoes of the eastern border areas (Department of Lands and Surveys, 1967; Varady, 1982).

Uganda has a diverse climate, influenced by the country's latitudinal position between 1°S and 4°N, and by altitude and topography. Seasonal movements of the Inter-Tropical Convergence Zone (ITCZ) determine the general pattern of rainfall, with rainy seasons during April - May and October - November around the equator, and a rather prolonged dry season between December and February. Much of the country receives 1 000 mm - 1 500 mm of rain per annum, the driest parts being in the north-east where Karamoja receives less than 750 mm, and the wettest parts are in the high mountains of Rwenzori and Elgon and the islands of Lake Victoria, which receive more than 2 000 mm (Department of Environment, 1992).

Mean temperatures are influenced by altitude, the warmest areas lying in the Rift Valley and the plains of northern Uganda, and the coolest being the highlands of the southwest and those on eastern border areas. Climatic conditions favourable to the formation of forest are found in parts of the southern half of the country where rainfall exceeds 1 150 mm per annum, evenly distributed throughout the year; and on the

Karamoja mountains where low temperatures associated with altitude serve to moderate water loss during the long dry season (Hamilton, 1984).

Ecologically, Uganda is exceptionally diverse. This is largely due to its location in east-central Africa, in a zone of overlap between ecological communities characteristic of the dry East African savanna, and those of the West African rainforests (Langdale-Brown, 1960). It is also partly as a result of the country's great topographical diversity, with a range of altitude from below 600 m in the bottom of the Rift Valley, to over 5 000 m at the top of the Rwenzori. The UNESCO vegetation map of Africa (White, 1983) shows that seven of mainland Africa's 18 phytochoria are represented in Uganda, more than in any other single country. Uganda contains vegetation (and associated animal communities) characteristic of habitats as diverse as glacier-topped mountains, lowland forests, *Butyrospermum* woodland savanna, and deciduous *Acacia - Comiphora* bushland and thicket (White, 1983).

2.3 The Role of Forestry in the National Economy

Before the military coup in 1971, Uganda had a very healthy economy, with an average annual growth rate of GDP of 5.1 per cent between 1961 and 1970, and all the sectors of the economy had positive growth rates (Ministry of Planning and Economic Development, 1982). The country had the strongest balance of payments position and the lowest cost of living in East Africa. The economy was basically rural, with over 50 per cent of GDP derived from agriculture, over 80 per cent of the population wholly dependent on agricultural production, and over 90 per cent of the export earnings coming from the same sector (Ochieng, 1985). Production in this sector was mainly by small-holder peasant farmers engaged in cash crops, and livestock production. The manufacturing sector was small (7.2% of GDP), but it was the fastest growing sector (11.7%), dominated by processing of primary products and production of simple

consumer goods which provided the basic needs of low and middle income households. The only mineral of any consequence was copper, which was the third main export commodity.

In external trade, Uganda had a surplus since the 1940s. Tourism was a significant foreign exchange earner. Forestry, together with fisheries, accounted for about 3.1 per cent of the GDP with an annual growth rate of 3.6 per cent between 1961 and 1970 (Ministry of Planning and Economic Development, 1970). Today, the economy is growing at 2.1 per cent and the contribution of forestry to the GDP is estimated at about 1.6 per cent (Ministry of Finance and Economic Planning, 1995).

Forests, and trees growing on agricultural and pastoral land, play a crucial role in the national economy, both in satisfying energy and industrial product needs, and in providing essential environmental services that support Uganda's agriculture, sustain her water supplies and protect her soils. There are few recent figures available to demonstrate the value of the forest resource, but in terms of satisfying energy requirements it is estimated that 96 per cent of Uganda's current energy consumption is provided by woodfuels equivalent to 18.3 million m³ of wood per annum (Ministry of Finance and Economic Planning, 1995). This is by far the greatest pressure on the forest resource. Woodfuels are used domestically in most rural and urban homes, and they provide the primary source of energy in the tea, tobacco, and brick-burning industries. In 1985, commercial woodfuels (which represent about 15% of total woodfuel demand) generated over three million man-days of employment and the equivalent of about US \$ 5 million in rural incomes (World Bank, 1986).

Between 1962 and 1971, Uganda had developed a thriving forest industry which employed some 3 000 people and processed 170 000 m³ of timber worth US \$ 8 million at 1985 prices (World Bank, 1986). However, most of the industrial plant has

subsequently broken down, and the country's sawn-timber requirements are today satisfied largely by an estimated 3 000 pitsawyers, many of whom cut illegally within the forest reserves (Howard, 1991).

The social role of forests should also be stressed since forests contribute substantially to rural communities living in their vicinity. Construction poles used for rural dwellings throughout the country account for as much as 400 000 m³ of timber annually. Forests also provide a range of other minor products including roofing materials, natural fibres, medicines and food. Furthermore, they often satisfy important ritual and cultural needs, and provide important wildlife refuges where hunting is carried out. These values are difficult to quantify in cash terms, yet they represent a significant contribution to community welfare, and the national economy.

Equally difficult to quantify, but of no less importance, is the role forests play in providing irreplaceable environmental services that support other sectors of the economy. By protecting water catchments, forests ensure supply of domestic water, maintain downstream fisheries, and in some cases, sustain hydro-electric power generation. As an agricultural country, the role of forests in ameliorating climate cannot be over emphasised.

2.4 The Forest Policy

The government of Uganda first adopted a Forest Policy in 1929, one which placed emphasis on the role of forestry in the protection of the environment (Forest Department, 1951; 1955). There have subsequently been several revisions of the original policy that have tended to place progressively greater emphasis on the realisation of short-term economic benefits from timber extraction activities (Hamilton, 1984). For example, the policy recommended over the period 1973 - 1978 stated that one of the

primary objectives was "to capture the returns to the nation from the natural forest resource resulting from the utilisation of the remaining areas" (Forest Department, 1980). Early in 1988 the Forest Policy was revised to re-emphasise the importance of protective forestry (Ministry of Environment Protection, 1988). Since then, the Forest Policy and the Forest Legislation have remained in force to protect the forest reserves and at the same time regulate the resource use. These two aspects are discussed in the next section.

2.5 Forest Protection and Regulation of Resource Use

The Forest Department is the government agency responsible for the implementation of national forestry policy. It is responsible for selection and management of forest reserves, protection of reserved trees, research and extension work. The Department's mandate has also periodically included the exploitation of forest products and the management of related industries.

The relevant legislation regulating the use of forest products is contained in the Forest Act of 1964 and a number of subsequent statutory instruments (Forest Department, 1980). There are some local variations in the rules governing different parts of the country but at the departmental level, the efficient management and control of individual forest reserves is facilitated by the use of Working Plans, which set out the objectives of management, and the methods to be employed in achieving those objectives over any given period.

Although all forest reserves come under the administration of the Forest Department, forestry personnel have no jurisdiction over the wild animals in these areas. This has been the responsibility of the Game Department - now a unit under the National Parks and Wildlife Service (NPWS). At present there is a ban on the killing of all wild

vertebrate animals throughout Uganda. Thus the vertebrate animals living within the country's forest reserves are given full legal protection under existing legislation, and no hunting is permitted. However, these legal provisions are not widely recognised in the rural areas.

2.6 Forest Wildlife Resources

As mentioned earlier, Uganda's forests are a significant economic resource that can be exploited to foster economic growth and development. What remains unresolved is the mechanism to be adopted to exploit the forest without causing serious harm to the forest's exuberant wildlife. This difficulty has been discussed in literature, for example, by Ehrlich (1990), Amelung and Diehl (1992) and Whitmore and Sayer (1992) and therefore will not be pursued further.

A report by Howard (1991) indicates that Uganda's forest reserves are extremely rich in plant and animal species. Davis (1986) reported that Uganda's principal forests support about 270-340 tree species out of a total flora of 5 000 species. The number of tree species per hectare varies widely between sites, the richest communities being those of swamps and mixed evergreen forests with up to 67 species, and the poorest being those of ironwood (*Cynometra* dominated) forest with as few as 11 species per hectare. The richest of Uganda's forests examined so far supports about a quarter as many tree species per unit area as the world's richest sites (Howard, 1991) and about half as many as the richest known African sites. The forests are also internally important as a home to 69 per cent of the birds that are restricted to the Albertine Rift area of Africa and to 16 species of animals considered to be under global threat of extinction.

In summary, the figures quoted above give the picture of the status of biodiversity of Uganda's forest reserves (discussed in section 2.9) which must be taken into account in

the event of any forest resource extraction activities. As is well known, the extraction of forest products often has debilitating effects on the forest wildlife. In the next section, a brief description is given as to how the forest resources in Uganda have been utilised in the past thirty years or so. It is intended to give an account of how the activities directly affect the forest wildlife.

2.7 Forest Resource Utilisation

One of the primary functions of Uganda's forest reserves has been to satisfy the country's wood requirements, and most of them have been used for this purpose. By the early 1970s sawmills had been established in most of the principal reserves, and others considered to be inaccessible or too steep for mechanised felling, were harvested by pitsawyers. Up until the early 1970s, timber extraction from the natural forest was relatively well organised and controlled by the Forest Department. Forest areas were divided into management compartments, each of which was harvested in an orderly manner. No felling was allowed in any area prior to systematic stock mapping by Forest Department staff and only trees marked for felling could be cut. Minimum girth limits were enforced.

As a result of good management and control, the quantity of round wood extracted from the natural forest for sawn-timber rose steadily throughout the period to 1970, and was projected to increase to 460 000 m³ by 1990. However, the political upheavals which overtook Uganda in the early 1970s brought about a period of severe economic decline which affected the forestry sector as badly as any. Most sawmills were Asian owned and when they were expelled in 1972 they were brought under the Forest Department and later transferred to a new parastatal body, the Wood Industries Corporation (WICO).

For a number of reasons WICO failed to keep the mills running, and by 1980 only two of the original 21 mills were operating and these at more or less half capacity. This resulted in a rapid decline in roundwood consumption which fell by more than two-thirds between 1970 and 1977. Ordinarily, one would have expected economic decline to slow down the rate of natural high forest disturbance, but to the contrary there was a sudden increase in illegal pit sawing. According to a World Bank (1986) report, there were close to 3 000 pitsawyers operating then in Uganda's forest reserves. It is an extremely labour intensive method of extracting timber. As a consequence of this shift in timber harvesting practice from saw millers to pitsawyers, harvesting is now more species-specific than previously.

The demand for fuelwood in Uganda is enormous, much greater than that for sawn-wood. The World Bank estimate of the demand in 1985 was 18.3 million m³ or about sixty times the sawn-wood demand. Current annual production of woody biomass in Uganda is estimated at 15.6 million m³ of fuelwood equivalent, in which case demand already exceeds sustainable supply by around 17 per cent. Various estimates indicate that 90-95 per cent of wood consumed in the country is for fuel. At present, part of this is taken from public land outside the forest reserves - from fuelwood plantations, small remnant patches of natural forest and woodland. The burgeoning brick-making industry consumes large quantities of fuel during firing, while the recent trend of rural people migrating to larger towns and the city also greatly increases the demand for charcoal.

The demand for building poles is also substantial, estimated by the World Bank to be between four and five billion poles or 300 000 to 400 000 m³ of wood. Those come mainly from open savanna woodlands, small private plantations, natural forest remnants on public lands and trees on agricultural land, but poles are also taken from all the forest reserves. Furthermore, the exploitation of bamboos, palmnuts, and rattan canes has a locally significant effect on the forests.

Hunting is common within the Ugandan forests and it is having a major impact on the populations of many of the larger mammals. Ungulates are favourite targets, particularly the larger ones such as buffalo (*Syncerus caffer*), giant forest hog (*Hylochoerus meinertzhageni*), bush buck (*Tragelaphus scriptus*), and bush pig (*Potamochoerus porcus*), but also various species of duiker (*Cephalophus spp.*) and other antelopes. Primates are also hunted but only by particular ethnic groups, for example, the Batwa, Bakonjo, Baamba, and Bagisu and only in Semliki, Rwenzori, and Mt. Elgon forests which are in the traditional areas of these groups. Ground-nesting birds are also sometimes caught. Hunting methods include snares, pitfall traps, poison tipped arrows, and the use of dogs to drive animals into nets. Guns are rarely used.

All these activities have, to a large extent, affected the status of forest wildlife in Uganda. Although hunting is forbidden in the forest reserves, there have been reports of gross violations of this restriction in various parts of the country. However, the need to protect the wildlife from uncontrolled hunting has gained increased recognition and in view of this, it is appropriate at this juncture to proceed with the discussion and examine the consequences of forest resource exploitation on forest wildlife. This is presented in the following section.

2.8 Effect of Forest Exploitation on Wildlife Resources

It has already been mentioned in the preceding discussion that forests are a home to a vast number of fauna, and their destruction results simultaneously in the elimination of a large number of such species. According to Gupta (1988), little is yet known about the ways in which forest management activities affect wildlife communities. Much of what is actually known is speculative and appears to be based on a general understanding of the fundamental principles of ecology.

Gupta's argument aside, it can still be said that forest exploitation does, in fact, affect wildlife communities in two major ways. Firstly, it changes the physical and biological environment in a manner that favours the survival of certain species at the expense of others by altering the habitat (IUCN, 1992). Secondly, it disturbs the balance of species through removal of particular plants or animals which then become less abundant or extinct (Whitmore and Sayer, 1929). Animal communities have close dependence on plants and in a natural forest, removal of trees adversely disturbs their habitats.

The impact of habitat disturbance on wildlife depends on the nature of the activity that has brought it about. In most of Uganda's natural forest reserves, it has been noted that mechanised timber harvesting has a far more severe effect on wildlife than the monocyclic felling system (see e.g. Plumtree and Reynolds, 1994). The selective pit sawing in which only trees exceeding a specified minimum girth are felled is an even more acceptable system (Howard, 1991) although it is illegal. In Kibale forest, studies by Struhsaker (1975) and Skorupa (1987) have shown that the disturbance of habitats of the larger fruit eating primates has led to a decline in their population whilst the disturbance of habitats of the smaller species has resulted in a rise in their population. On the other hand the population of birds, rodents, and primates appear to be lower in the areas that have been heavily logged (Johns, 1992).

Logging has also been reported to have considerable impact on plant species composition and structure of the forest (see e.g. Skorupa and Kasenene, 1984). In most cases the secondary forest is more mixed and species rich, although lacking the characteristics of the climax communities. As observed by Eggeling (1947) some of the rarer species tend to be eliminated altogether. In Kibale, it has been reported that logging has changed the composition of epiphyte communities and the original components of the herbaceous flora as a result of the unfavourable climatic conditions created by opening the forest canopy (Davidson, 1985). Pit sawing, although known for being

selective, has surprisingly caused the elimination of some of the commercially valuable mahogany species in places where they have been rare (Knees and Gardner, 1983).

It has been difficult to assess the impact of hunting on the population of wild animals since there is very little information available on the abundance of these animals in different forests. However, there have already been a number of species extinctions attributed to hunting in the recent past. For example, buffaloes (*S. caffer*) have disappeared from the Bwindi, Rwenzori, Kasyoha-Kitomi, and Itwara forests during the past twenty years, and the population elsewhere has been reported to be very low (Howard, 1991). Furthermore, elephants (*Loxodonta africana africana*) have been almost eliminated from Bugoma, Mabira, and Itwara, and only small remnant populations exist in other forests. According to Howard (1991), local people in the vicinity of most of the forests commonly report that populations of many forest ungulates and other hunted animals have been drastically reduced in recent years.

Clearly, Howard's findings highlight the need to develop a national conservation strategy that looks to the protection of forest wildlife resources. It can also be implied from his observations that the current legislation governing the utilisation of forest wildlife resources should be re-examined and strengthened in view of the deteriorating number of animals. This is imperative if the government policy on promotion of forest ecotourism is expected to yield sustainable economic benefits to the country. Forest wildlife resources are the foundation upon which nature-based tourism is developed and good management of Uganda's forests will make a crucial contribution to this end.

Forest wildlife resources are a component of the wider national biodiversity spectrum. It would be erroneous to talk about the effect of forest utilisation on wildlife in this thesis without touching on the even more important area of forest biodiversity conservation. Consequently, it is felt desirable to extend this discussion to include a brief

look at the conservation of forest biodiversity in Uganda. This will be made deliberately concise because there already exists a vast amount of literature on the conservation of biodiversity to which reference can be made. In the next section, therefore, the discussion is limited only to the significance of managing nature reserves in natural forests and how their management offers an alternative approach to conservation of biodiversity in Uganda.

2.9 Conservation of Forest Biodiversity

A report by Tolba *et. al.* (1992) on the state of the world's environment indicates that biological conservation is generally important for the long-term benefit of mankind. This position had earlier been emphasised during the United Nations General Assembly in 1984 where the "World Charter for Nature" was adopted. The charter stipulated that all species warrant respect regardless of their usefulness to humanity.

The significance of biodiversity conservation in Uganda can be justified on several grounds. For instance, Uganda has one of the highest numbers of species of plants and animals despite having only two per cent of the world's land area. There are over 20 000 species of plants, 100 000 species of invertebrates, and more than 2 000 species of vertebrates (Howard, 1991; Department of Environment, 1992). The majority of these species exist in the forest ecosystems, a factor that may be used to explain why Uganda has become a focus of conservation interest in the past few years. Several protected area categories have been established for *in situ* conservation and many of these are found in the natural forest reserves. The Forest Department has created 12 Strict Nature Reserves (SNRs) either within the forest reserves or as a percentage representative sample of all habitat types of the particular forest. The SNR system has been planned to cover approximately 20 per cent of the forest ecosystem (i.e. of protected forest land).

Based on the IUCN system of classification, higher conservation values have been given to areas of higher biodiversity (rich in species and habitat diversity) especially in south-western Uganda. The Forest Department has created other categories to give certain levels of protection to specific ecosystems with peculiar characteristics not common to all other areas. For example, Sites of Special Scientific Interest (SSSI) (similar to those in Britain) have been designated in areas where past management has created positive or negative impact, and in areas of special interest to protect unique, threatened, or rare habitats or species. Such areas have either disturbed or undisturbed ecosystems.

The other category is that of forested national parks and Kibale is a good example in this case. Kibale is one of the four natural forest reserves which were converted to national park status in 1993. This new category of forest national parks have multi-purpose objectives including research, recreation and tourism in addition to providing forest products to the local communities under sustainable management. Howard's recommendations stress the need to gazette more areas to offer protection to ecosystems under threat. There are additional proposals for establishment of a biodiversity protection policy to cater for threatened and rare species outside protected areas. As a contribution towards the discussion on how such a strategy may be achieved, the need for expansion of the protected area system in Uganda is examined in the next section.

2.10 Protected Areas and Forestry in Uganda

There is widespread appreciation of the need to expand the existing network of areas in Uganda set aside for protection of natural forest ecosystems. Recent conversion of some of the forest reserves into national parks serves to illustrate this growing appreciation. As stated earlier, the Forest Department has undertaken to expand the forest nature reserve network to cover 20 per cent of the country's reserved natural high

forest estate, and to protect a further 30 per cent from intensive forms of forest management as buffer zones. This development obviously demands for a change in the management strategy for each of the country's forests as well. In order to conserve the biological diversity, strict protection of some of the forest areas from extractive resource use will have to be implemented. Ideally, it may be argued that all the remaining natural forests in Uganda should be set aside as strictly protected areas. But such argument would merely conflict with other pressing demands to realise returns from such areas (see e.g. Mason, 1995) and therefore would not be realistically achievable.

Uganda's forest reserves can be afforded legal protection in many ways. Presently there are three possible options: either to designate them as national parks, game reserves/animal sanctuaries, or nature reserves. A national park is the highest conservation status which can be given to any area for the purposes of protecting natural and scenic areas of national or international importance for scientific, educational, and recreational use (Mackinnon and Mackinnon, 1986; Mackinnon *et. al.*, 1986).

In Uganda, the National Parks and Wildlife Service (NPWS) would be the more appropriate custodian of protected areas and several reasons can be given for this. Firstly, NPWS can be seen as the most effective manager of areas desired for preservation because, unlike the Forest Department, it has no conflicting interest in promoting consumptive forms of resource use in natural forests. Secondly, by converting natural forest reserves into national parks, the status of the forests is more secure because national parks are legally established and can only be degazetted through an Act of Parliament. Management decisions about national parks are made by a Board of Trustees and not a single senior civil servant as is the case with forest reservation. Under the Forest Act (1964), a Senior Forest Officer can declare an area as a forest reserve and bring its control under the Forest Department. Thirdly, the National Parks Act provides for a broader protection of plant and animal life, whereas the Forests Act provides for

the protection of plant life only. This means that, where complete ecosystem protection is the management priority, NPWS becomes the appropriate authority. At the moment, forestry staff have no jurisdiction over animal life in the forest reserves. Lastly, the NPWS can be viewed as having experience and expertise in tourism planning and development which the Forest Department lacks. In view of this, it can be argued that where a strong tourism potential exists, NPWS would be more capable of capturing that potential and managing the area for the economic benefit of the nation.

On the other hand, there are a number of reasons why national park status may be viewed as inappropriate for natural forest areas. For instance, it may not be in the best interest of Uganda to institute preservation policies in forest areas which have always provided substantial economic and social benefits through consumptive resource exploitation. Setting aside forest areas carries very high costs in terms of opportunities forgone which may not be justified by the benefits of preservation (Mason, 1995). Although the National Parks Act allows limited use of resources within national parks (see e.g. Howard, 1991), NPWS has no experience of regulating such use. At the same time, local people living alongside forested areas are usually deeply suspicious of moves to create national parks, fearing loss of opportunities in the use of forest products to which they have traditionally had access. Unless the establishment of national parks are socially acceptable to local people, there is a substantial risk of backlash against them, which could result in severe forest degradation, encroachment or even something worse.

One of the primary objectives of managing the forested national parks in Uganda is to provide recreation and tourism opportunities alongside conservation. A major initiative in this respect has already been taken in Kibale where facilities for recreation and ecotourism have been established. This development also marked the beginning of forest ecotourism in Uganda. The forests and the abundant wildlife resources offer the country a high potential for ecotourism development and is a promising sector for

substantial future foreign exchange earnings. Seen in this light, it has been felt necessary to devote the next section to a discussion of the general background to forest ecotourism in Uganda. It will be noted that the need to conserve forest biodiversity and to promote environmental education paved the way for the rise of forest ecotourism in Uganda.

2.11 The Rise of Forest Ecotourism in Uganda

Ecotourism has been defined by Boo (1990) as "nature-based tourism that contributes to conservation through generating funds for protected areas, creating employment opportunities for local communities, and offering environmental education". At the end of July 1991, a London based organisation known as FRONTIER and the Makerere University Biological Field Station (MUBFS) began the implementation of the Kibale Forest Tourism Project. FRONTIER is a non-profit making International Non-Governmental Organisation with interest in conservation and development of nature-based tourism. FRONTIER was responsible for the initial layout of the nature trails. They employed local labour force to construct and maintain the trails. Tourist guides were trained prior to allowing in visitors. Meanwhile, an extension education programme was instituted with the aim of educating the local communities around the forest about the up-coming ecotourism project and the importance of protecting the environment in general.

After the completion of the work at the Kanyancu Campsite, the camp was opened to visitors in January 1992. More facilities have since then been put up in response to the increasing number of visitors. The facilities have been located close to the Dura River in the south of Kibale forest reserve which makes the campsite more attractive. It is adjacent to and about 200 m from Fort-Portal - Kamwenge Road, and 31 km from Fort-Portal town (see Fig. 6.1, p 122).

The recreation area overlaps with part of the Ngogo Nature Reserve which is located within the national park and also extends into part of the buffer zone surrounding the nature reserve. The trail system covers an area of about 30 km² in the forest within the recreation zone. Camping facilities have been put up in essentially a buffer zone area where only minimum and supervised access is allowed into the reserve area.

The site was selected for several reasons. Firstly, the area is hilly although not as steep as elsewhere in the forest reserve and offers a better viewing spot of the entire forest canopy. The hilly terrain also makes walking an interesting exercise along the nature trails. Secondly, there are different habitat types located within the general area and include river-rain forest swamp, tall forest and grassland which in turn provide a variety of natural sites for visitor enjoyment. Lastly, there are large numbers of trees, especially figs (*Ficus sp.*), producing fruits that attract chimpanzees (*P. troglodytes*), monkeys and birds and makes it easy for visitors to view them.

The number of visitors at Kanyancu is still low, estimated currently at 5 000 per year, and characterised by fluctuations in arrivals probably because the place is still little known. But, it is expected that over time, the number of visitors will increase. The visitors register at Kanyancu indicates that there are more foreign visitors to the national park than Ugandans. A more detailed account of the characteristics of visitors and visits are presented in Chapter 6 and the probable reasons for the low level of visits by Ugandans are discussed in Chapter 9.

2.12 Conclusion

Several conclusions can be drawn from the foregoing discussion. Firstly, it has become clear that Uganda is richly endowed with forest resources, which offers a huge potential for development of ecotourism. But the forests need to be protected for their

rich biological diversity. It is expected that the rich biological diversity will continue to be a major source of visitor attraction. Though a relatively new concept, ecotourism promises substantial economic benefits to Uganda. However, the resource base that supports it must be protected and managed properly. The Forest Department and the NPWS have a crucial role to play in this respect. As custodians and managers of some of the richest forest reserves in the country, the NPWS' management policy ought to be geared toward conservation. Meanwhile, the conversion of Kibale forest reserve into a national park should be seen as evidence of commitment and positive development in the conservation policy of Uganda. But adopting a conservation policy that forbids exploitation of natural high forests means forgoing the supply of several forest products especially sawn timber and building poles. As a result forestry will be expected to make a significant contribution by providing alternative sources of wood. It is envisaged that in time, Uganda's timber requirements will be met from plantations so that the emphasis of natural forest management can shift from timber production to become increasingly multiple-use. This, however, will take time and it may be a decade or so before this is translated into practice.

As the economy recovers and as the country becomes less dependent on the natural forests for timber, it is possible that many of the principal natural forests could become national parks. It is quite conceivable that the management of protected areas might ultimately be put under one ministry, thus paving the way for the subsequent rationalisation of protected areas throughout the country. In the meantime, the Forest Department will play a complementary role in conserving the forest biodiversity highly valued as the major base for developing ecotourism.

CHAPTER 3

RECREATION, ECOTOURISM, CONSERVATION AND ENVIRONMENTAL INTERPRETATION- AN OVERVIEW

3.1 Introduction

The purpose of this chapter is to present an overview of three main areas of this study namely, recreation and ecotourism, conservation, and environmental interpretation. From the extremely wide body of literature available on outdoor recreation and ecotourism, it has been felt necessary to select only those areas of major concern in this study. As a result, the review gives due consideration to some common problems often encountered by resource managers in trying to integrate the management of ecotourism with that of conservation. In addition, the environmental impact of recreation/ecotourism is given prominence and the role of interpretation is stressed.

It is widely acknowledged that ecotourism and conservation can be integrated if certain fundamental conservation rules are adhered to. Quite often conflict arises when trying to fulfil the objectives of both. Environmental interpretation can, however, be used to reconcile the two interests and consequently establish relationships between ecotourism, conservation, and interpretation. As will be seen later in this chapter, environmental interpretation is a valuable tool that can be used to conserve natural environments and manage resources. Accordingly, much emphasis has been placed in the discussion on the role of interpretation in the management of recreation resources.

As a means of guiding the discussion, this chapter has been structured to follow a logical progression from recreation (section 3.2), ecotourism (section 3.3) to conservation (section 3.4), and then interpretation (section 3.5). In a similar fashion, the discussion begins with a brief history of the development of outdoor recreation in

developed countries followed by an examination of the current trends in outdoor recreation in the tropics (sub-section 3.2.1). The major features of forest recreation are reviewed in sub-section 3.2.2 and a synopsis of the demand for outdoor recreation is presented in sub-section 3.2.3. The concept of ecotourism is described in sub-section 3.3.1 and the relationships between ecotourism, environment and development are summarised in sub-section 3.3.2. In section 3.4 the significance of environmental conservation for aesthetic and recreational purposes is highlighted and the environmental impact of recreation is discussed in sub-section 3.4.2. The chapter concludes with an overview of environmental interpretation and defines how it can be used to promote conservation alongside natural resource use.

3.2 Recreation

Definitions

Discussion about recreation has often been plagued by much misunderstanding and vagueness, because the same word means different things to different people. As such, it has been felt desirable to make a clear distinction between recreation and leisure as the two words are usually taken to be synonymous. The definition of recreation by Clawson and Knetsch (1966) and of leisure by Burton (1971) have been chosen.

Recreation means an activity (or planned inactivity) undertaken because one wants to do it (Clawson and Knetsch, 1966). In a deeper psychological sense, recreation refers to the human, emotional experience arising out of the recreation act. It is clear from this definition that recreation contrasts with work, which is done primarily to earn money or otherwise to provide the necessities of life. There is, apparently, no sharp line between recreation and all other activities because the same activity may be work at some time and recreation at another. According to Clawson and Knetsch (1966), the distinguishing

characteristic of recreation is not the activity itself but the attitude with which it is undertaken. As a result, where there is no feeling of compulsion, an activity is treated as recreation.

Recreation is closely related to leisure. In its widest sense, recreation is identical with leisure. In a narrower sense, it is qualified by reference to such factors as location and timing, for instance, outdoor and indoor recreation; day trip and the annual holiday (Burton, 1971). It has also been stated that recreation and leisure can be distinguished according to function (Patmore, 1983). Broadly, recreation is said to encompass the functions of relaxation and entertainment and the activities undertaken during leisure time (Seeley, 1973) whilst leisure is concerned chiefly with personal and social development (Seabrooke and Miles, 1993). Stated simply, leisure is the time when an individual is free from work or other formal duties, and recreation is the use made of such time. On this basis, Clawson and Knetsch (1966) conclude that mere idleness is neither recreation nor leisure.

Outdoor recreation refers to activities that enhance self-expression and self-esteem outside the home (Clawson and Knetsch, 1966). Outdoor recreation obviously requires space and resources, sometimes in large quantities, for its enjoyment. Some kinds are best carried out where the natural landscape has been slightly modified (Clawson, 1965) whilst others require extensive investment (Clawson and Knetsch, 1966).

Recreation activities are those specific actions undertaken as part of recreation, either indoors or outdoors (Patmore, 1983). Some of the activities may be relatively formal, as is the case with organised games and other group activities, but most are usually informal (Clawson and Knetsch, 1966).

3.2.1 Development of Outdoor Recreation in Developed Countries

The discussion which follows in this section refers mainly to the growth of outdoor recreation in the UK and USA although valuable information also exists for other countries. Equally important is the vast amount of literature on outdoor recreation from several countries which have been used to a considerable extent in the discussion.

Interest in outdoor recreation grew in the nineteenth century as a reaction to the stress and squalor of the expanding industrial cities (Torkilsden, 1992). As a result leisure and recreation are considered largely as phenomena of post-war society. In the UK and USA, the upsurge of industrialisation and long working hours left many workers with little time for relaxation. In addition, outings on rest-days were hampered by lack of transport. Consequently, many people sought entertainment largely within the confines of urban areas. However, outdoor recreation is now an established form of land use and during the past few decades the number of people spending part of their leisure time in the countryside has increased substantially. Several authors have attributed the high increase to factors such as population growth, increase in the amount of leisure time, rise in real and disposable incomes, growth in private car ownership, and higher levels of education (Clawson, 1965; Clawson and Knetsch, 1966; Patmore, 1983; Seeley, 1973; and Curtis, 1979). As a result, a great deal of attention has been focused on outdoor recreation in the recent past. For the resource managers the changes have brought a wide range of problems related to the supply, provision, and management of facilities (see e.g. Harrison, 1991; Countryside Commission, 1992; Glyptis, 1992; Scott, 1992).

Recreation Trends in the Tropics

In many tropical countries, outdoor recreation is still a relatively new idea. Local participation in recreational activities is often very low and tends to be based on

organised group trips and, recently ecotourism. In many countries ecotourism is largely dominated by foreign visitors (Boo, 1990). Nevertheless, in countries such as Malaysia (see Wan Sabri, 1987) current socio-economic trends indicate a positive growth in outdoor recreation.

As the demand for outdoor recreation increases, forests will be expected to meet a significant proportion of this increase. Forests are viewed as a major recreational resource because of their attractions and relatively easy access. The situation in the tropics will, nevertheless, be more satisfactory than in the developed countries where the main forest areas tend to be either too small or too far away from the main centres of population. Consequently, it is hoped that opening up the tropical forests to the public and providing recreational facilities such as nature trails, picnic sites and information centres will lead to substantial growth in forest recreation and ecotourism.

However, development in the field of forest ecotourism will have to be seen in a wider perspective. In several tropical countries, forestry is still lacking in the practice of true multiple-use management which should provide for recreation and ecotourism (FAO, 1985; 1993). Therefore, it appears that for most tropical countries the more appropriate policy that can be advocated at this stage is the adoption of a sustainable multiple-use forest management system which will cater for ecotourism. In the case of Uganda, the conversion of forest reserves into national parks has already been a positive move toward achieving such a policy. Similar developments are expected elsewhere in the tropics in the near future.

3.2.2 Forest Recreation

Douglass (1975) has defined forest recreation as "any form of outdoor recreation that takes place in a forested area whether or not the forest provides the primary purpose

for the activity". Although this is an over simplified definition because of many confounding issues, it is essentially true. For example, sightseeing in the countryside is outdoor recreation, but once done in the forest it becomes forest recreation. Thus, when an activity requires direct use of the forest for consumption or indirectly as a background setting, that activity is a form of forest recreation.

Forests were once thought of as areas of vegetation fit to be cleared or utilised and their products put to use for the good of the people. In the USA, after the second World War, and as the economy developed, the force of recreation was felt upon the forests (Douglass, 1975). In the 1960s recreation became recognised as a major part of the forest resource. In some areas of heavy public use, recreation became the most valuable use of the forest. The demand for forest recreation facilities continued to increase in the 1970s and today visitors continue to flood recreation facilities as their relative affluence and mobility continue to rise.

In other countries, the public has turned to the forested areas and woodlands to satisfy many of their recreation needs (see e.g. Buchanan, 1991). As pointed out by Douglass (1975), forests provide a natural and logical direction for recreational pressure to force itself. There are certain features of the forest which provide a special environment for the visitor, for example, the size, structure, variety, diversity, shelter, screening and age. Forest areas are known for providing solitude of varying degrees desired by different recreation interests. According to Irving (1985) trees are the only form of life larger than mankind that are encountered everyday. Their height, breadth, complexity of form and myriad component parts are a very strong feature of the natural world. The sheer size of trees, particularly when grouped together in a forest, can impress even the least sensitive visitor. The structure of trees gives the visitor an immediate sense of presence of nature.

Variety is a characteristic that many visitors enjoy in a forest. It is expressed by mixtures of broad leaves, different colours of foliage and bark, variation in the age of trees, tree shapes and form. Partly as a result of their size, trees modify conditions beneath their canopy and provide shelter and shade for the visitor. The screening effect of a forest is one of its most valuable features for recreation. On entering a forest, the visitor is isolated from the surrounding landscape, and also from other visitors which relieves the feeling of overcrowding. This gives forests a high capacity to absorb visitors and yet provide them with a sense of nature, timeliness, and peace (Tartaglia-Kershaw, 1982). Forests are the most robust form of land cover able to absorb sight and sound of people (Broadhurst, 1993; Charles *et.al.*, 1993). Space, solitude, inspiration and habitat for wildlife are all found in the forest. In addition, the forest provides an opportunity for a person to practice some degree of self-reliance (Everett, 1979; Willis and Benson, 1989). In summary, it is the seclusion, peace, quiet and natural atmosphere offered by the forest that attract most visitors (Tourism and Recreation Research Unit, 1980).

Since recreation is one of the fastest growing demands being made on forest resources (see e.g. Simmons, 1981), it is appropriate at this juncture to examine the demand for outdoor recreation. This is presented in the next sub-section together with the discussion of the factors that determine the demand and supply of recreation opportunities.

3.2.3 The Demand for Outdoor Recreation

Introduction

Recreation demand has been defined as "the use of existing facilities and the desire to use facilities either now (present demand) or in the future (future demand), subject always to the ability of individuals to use those facilities" (Countryside

Commission, 1970). The concept is, however, a little more complex than it appears because recreational demand consists of two components: effective (expressed) demand, and latent demand. Effective (expressed) demand is the actual use of recreation opportunities over any given period of time (Burton, 1981). Latent demand includes both deferred demand and potential demand (Countryside Review Committee, 1977). Deferred demand is the desire expressed as the number of people willing to and who are able to, participate in recreation pursuits but cannot due to lack of opportunity, whilst potential demand is the demand which will become effective at some future date if certain circumstances change (Burton, 1971; Countryside Review Committee, 1977).

Factors which Influence Recreation Demand

Several factors have been responsible for the growth in demand for outdoor recreation. Effectively five major factors influence the consumption of outdoor recreation namely, demographic characteristics, socio-economic characteristics, amount of leisure time, mobility, and environmental factors.

The demographic characteristics which influence consumption of outdoor recreation include population size and distribution, age and sex structure, marital status, and family composition (Seeley, 1973). In the UK, it has been reported that any change in the total population causes a proportional change in recreation demand, whilst any change in the distribution of population brings a proportionate increase in the pressure exerted upon the recreational resources close to the area of growth (Williams, 1976). The age of the consumer influences both the level and type of demand. Despite enjoying the largest amount of leisure time, it is believed that those in the younger and older age groups tend to be least prominent in relation to their percentage of the population. Rodgers (1969) explains this in terms of lack of mobility and the relatively small disposable incomes they have. As a result, the type of demand is affected as older

individuals are involved in those activities which require little physical assertion, whilst younger individuals are biased towards active and physical recreation pursuits (Coppock and Duffield, 1975).

Marital status is another important factor. It has been shown that married people make less outings than single ones and are less involved in active recreation. This is attributed to domestic demands which often encroach upon the leisure time available to married persons and the constraints imposed by the presence of children. The presence or absence of children is, therefore, the feature of most importance in family participation in outdoor recreation.

The effects of socio-economic characteristics on recreational expression appear to be complicated because socio-economic status is a function of education, employment and income, and social status or class (White and Dunn, 1974). These factors are closely related since education is inclined to determine employment and hence income (Seeley, 1973) and all three determine status or social class. The combination of spending power, values and preference seem most important in determining recreational behaviour, a view shared by Bardon (1978) who stated that it is the lifestyle in general (a combination of spending powers and values) rather than the income in particular which gives an indication of recreational activities of a particular group.

Employment is fundamental in determining recreation demand as it is a significant factor controlling the amount of leisure time available. Patmore (1970) reported that in the UK, increased recreational demands are caused in part by shortening of the working week and instigation of paid holidays. However, Bardon (1978) disagrees and argues that shortening of the working week is, in fact, not as important as might be expected since it appears that most people prefer to work overtime to increase income rather than have free time. Nevertheless, several studies indicate that paid holidays are

much more influential on increased recreational demand (Bracken-Tisen, 1984; Wan Sabri, 1987).

Familiarity with and perception of the facilities influence the type of recreational demand. Familiarity with a facility or recreation resource leads to a reduction in its perceived value. On the other hand, individuals unfamiliar with the same facility could attach a much higher value to it.

The complexities of demand cannot, however, be fully understood without considering some of the aspects of supply. The highly correlated relationship between supply and demand is illustrated in the definition of demand given by Coppock and Duffield (1975) as "the amounts of various recreational activities in which a population will be willing and able to participate, given that access to facilities is very easy, the facilities are all of high quality and the limits of their capacity have not been reached". Thus, demand is very much influenced by supply. Usually facilities of very high quality generate substantial demand. Similarly, supply can be greatly affected by demand. Latent demands lead to provision of facilities, whilst excessive effective demands cause degradation or even destruction of recreation resources and facilities. In terms of ecotourism management, the latter factor is of paramount importance in protected areas.

The Supply of Recreation Opportunities

Observations by Coppock and Duffield (1975) suggest that recreational resources are dynamic elements defined culturally by the nature of activities. In absolute terms, the level of recreation supply is determined by the physical environment which changes according to human effort and behaviour. In many ways, the supply of recreation opportunities is comparable to the demand in the sense that it may be considered as both potential and actual. On the other hand, the relationship between

available or actual supply and potential supply is similar to that of consumption (participation) and demand. Actual supply represents the proportion of potential supply which is available, bearing in mind the constraints operating at a particular point in time. In terms of forest ecotourism, potential supply of forest resources only become actual when valued and exploited by visitors (Benson,1992). In general, the availability of resources varies according to knowledge possessed by the visitors, changing individual desires and tastes, and social objectives (Sandhu, 1983).

There are two primary factors which determine one's decision to participate in outdoor recreation and, arguably ecotourism. Firstly, there is the choice of recreational activity and secondly, the choice of recreational site/destination. In addition, there are four factors which influence the choice of activity itself. The first is the time available for recreation or the outing under consideration, and this is often a significant constraint. It is related to employment and therefore to education and other socio-economic variables. The second is one's awareness and perception of the range of possibilities which in turn controls choice. The education of the visitor is important in this respect since, generally, the better educated will be more aware of the full range of choices. However, other factors such as knowledge of friends and relatives and the role of advertising are also significant in influencing the perception of visitors. The third is the participation of a group which may restrict the choice of activity. This factor is related to the fourth factor, the visitors' demographic characteristics. It is believed that the effective choice of activities tends to be limited to that of the least adaptable member of the party, for example, children or elderly people present within a group.

The choice of recreation site is governed by more obvious factors of supply in addition to a number of other factors which also influence the choice of activity. These factors include distance from the site, provision and quality of facilities, familiarity, accessibility and capacity. Although distance can be measured in terms of kilometres,

time or money, Molyneux (1970) believes that time is probably the most useful variable of measurement. The measurement of distance travelled in terms of kilometres, time or money usually enables the definition of catchment area.

Furthermore, the quality of the available recreation sites and of the facilities provided, affects the choice of location. Many of the problems faced in achieving a desired balance between demand and supply are often rooted in people's feelings and reactions regarding the quality of the existing facilities. In most cases, recreation sites and facilities of high quality are much more likely to stimulate demand than those of low quality. Consequently, the former tends to be used more frequently by greater numbers, an observation which compares well with that of Wan Sabri (1987) who reported that high quality resources tend to draw more users from a wider area, especially if the opportunities available are not commonplace.

As in the choice of activity, familiarity is an important factor in the choice of recreation site. An individual's assessment of recreational resources from which to choose a destination normally revolves around his awareness and perception of the total resources. As such, his final decision is made within the constraints of his knowledge concerning the availability and characteristics of a facility. This confirms an earlier observation by O'Riordan (1971) that most people visit locations of which they have previous experience or at least some knowledge. In the case of ecotourism, this is not necessarily true as many tourists are interested in visiting new places and repeat visitors are rare.

Accessibility is fundamental in the choice of a site. Accessibility in terms of distance has already been referred to, but accessibility at the local scale is also important. Lastly, the carrying capacity of recreation resources also affects visitors' choice of location. If the carrying capacity of a site is exceeded it may result in overcrowding and

environmental degradation, thus affecting the recreation experience and the quality of the site. This creates a management problem as well since recreation managers are expected to maintain the quality of recreational resources in a natural state. Ideally, resource managers should have a good understanding of recreational impacts so that they are able to determine how much and what kind of change is occurring and is acceptable.

Further discussion of the environmental impact of recreation is presented in sub-section 3.4.2. In the next section a broad overview of the concept of ecotourism is given. First, the definition of ecotourism is attempted (sub-section 3.3.1) followed by a brief look at the relationships between ecotourism, environment and development (sub-section 3.3.2).

3.3 Ecotourism

According to Cater (1994) ecotourism is an alternative form of tourism and tourism itself is an economic activity that transects many sectors, levels, and interests. As a result there has been difficulty in reaching a consensus on the definitions used and the criteria employed in arriving at those definitions.

3.3.1 Definition and Problems

There are several definitions of ecotourism because of the wide range in its meaning. However, there appears to be a general agreement that ecotourism is characterised by three main things:

- attracting tourists to natural environments which are unique and accessible;
- improving nature conservation through education, changing attitudes in local

people and governments, community development and altered political priorities;
and

- providing employment and entrepreneurial opportunities for local people.

According to Tickell (1994) ecotourism means "travel to enjoy the world's amazing diversity of natural life and human culture without causing damage to either". It differs from the conventional mass tourism by having a conservation ethic. Ecotourism has been singled out as the fastest growing sector in the tourism industry and as a result it has received much attention. It is now identified as a niche or market segment equated with nature or ecologically based tourism. Steele (see Cater, 1994) describes ecotourism as "an economic process where rare and beautiful eco-systems are marketed internationally to attract tourists". The eco-systems include cultural attractions of the destination, for example, natural landscapes which have evolved over thousands of years under indigenous land management practices (Hall, 1994).

On the other hand, Wight (1994) has made three observations about ecotourism. First, he looks at ecotourism as a resource based industry that needs to be ecologically acceptable and linked to nature conservation. Secondly, he suggests that the inextricable relationships between natural resource base and human activities need to be well understood if sustainable ecotourism is to be achieved. Thirdly, he cautions that resource conservation must not be divorced from development issues as sustainable ecotourism can only be realised if the multitude of interests involved are satisfied.

3.3.2 Ecotourism, Environment and Development

The relationships between tourism, environment and development has been discussed by Butler (1991), Whelan (1991), and Sherman and Dixon (1991). They have noted that the desire to maximise profits and revenue by tourism organisations often

result in environmental degradation which not only curtails the potential for tourism development but also development in general which such environments offered for the future. Sound management, which includes co-ordination of different forms of land use and involvement of local population, have been recommended as appropriate baseline activities required for the success of any ecotourism programme. In brief, the protection of the environment is an essential part of ecotourism development. Without sufficient environmental protection, ecotourism development would be impeded.

Cater (1994) has described the link between development and environment from four scenarios. The first is a situation where the positive link between environment and development results in environmental improvement. A similar observation has been made by Sisman (1994) who noted that such situations arise where sound environmental and business practices coincide. The second is a situation where the environment benefits, but where other interests may lose out, for example, the designation of national parks and protected areas to fulfil conservation aims. Here, the local population loses out if they are denied access for their traditional practices such as grazing, hunting for bushmeat, gathering of wildfruits and vegetables. To this end, Cater calls for a broader recognition of the environment as an economic, ecological, social and cultural resource to be protected for the benefit of the indigenous population.

The third is a situation which occurs where the environment is likely to be damaged while other interests benefit even if only for a short time. An example is the case of coastal tourism development where the environment is downgraded in the interest of short- term profit maximisation. The last is a situation where all interests are compromised as a result of degradation of the resources upon which ecotourism is based. All these scenarios suggest the need for sound planning and management of conservation and ecotourism programmes. In view of this, the next section discusses the importance of conservation in a wider environmental context.

3.4 Conservation

It has been noted in Chapter 1 that conservation is a much used term and has a wide range of meanings. The concept originates from the utilitarian notion of "improvement" (see e.g Anderson and Grove, 1989). Green (1981) lists three main types of conservation. The first is that perceived to be essentially the preservation and protection of those features of the environment thought to be of amenity value (see also Hackett, 1980; Lucas, 1992). He links this concept to the threat of pollution of air and water that has forced many people to regard the maintenance of environmental quality as much more a necessity than an amenity. In his view, the control of pollution and maintenance of an environment fit to live in, as well as pleasant, has come to be part of the conservation concept. Arising from this view is the second context of conservation namely, the planned use of resources to ensure their continuing supply (see e.g. Allen and Leonard, 1966; Warren and Goldsmith, 1983). The third concept, and one which appears to be more dynamic than the first two, embodies change and development as well as a measure of protection. It assumes that if resources were used wisely, a high quality environment with the maintenance of desirable features would inevitably result, that is, the third subsumes the first two.

Evans (1992) looks at conservation as a process of reconciliation between the things which are needed for practical satisfaction of people and those which make life worthwhile. This and similar definitions by Darling (1971), IUCN (1978), MacEwen and MacEwen (1982), Nature Conservancy Council (1984), and Nicholson (1987) appeal because they imply that if profligacy is avoided, Man can exploit natural resources and yet continue to enjoy a pleasant environment.

3.4.1 Conservation for Aesthetic and Recreational Purposes

As mentioned above, conservation is basically the preservation and protection of natural resources. Green (1981) specifically defines it as "the scientific management of natural environments and resources for the purpose of maximising their aesthetic, educational, recreational, and economic benefits to society". Seen in this light, conservation can be said to involve utilisation of techniques designed to preserve, enhance, protect, or re-use those elements of the natural environment perceived as vital for human survival and development (Beyer, 1980).

It has been noted by Dower (1973), Phillips and Roberts (1973) and Cherry (1974) that intensive use of the countryside under modern agriculture has caused huge and immeasurable losses of the original landscape which was rich in wildlife and, therefore, loss of recreational opportunity. Logically, as land uses intensify, the possibilities of multipurpose use decline (Garrat, 1984) and the need for areas to be set aside specifically for amenity requirements increases. But usually pressures from other types of land use make it very difficult to achieve this kind of plan.

Wildlife and wild country are now essential ingredients of holiday packages to a great many people in developed countries. To others, wildlife and the natural environment may not be so overtly important, but nonetheless they still form an integral part of their enjoyment of the countryside. The demand for wild land managed primarily for amenity is high. Although great strides have been made in meeting this demand, the provision and protection of amenity lands is still vastly inadequate and their management remains even more so (Dasmann, 1984; Anderson and Grove, 1989; and Lucas 1992).

Cater's (1994) earlier observation that environmental conservation should be planned for the benefit of local communities deserves further discussion as it also

touches on a major aspect of this study. Consequently, the subject is examined slightly further in the next sub-section. First, the relationship between conservation and indigenous peoples is explored and this is followed by a brief look at the major issues pertaining to forest/park resource conservation, local community use of the resources, and user rights.

3.4.2 Conservation, Resource Use and User Rights

Conservation and Indigenous Peoples

It is clear from several publications that conservation of nature has become fundamental to human existence. Dasmann (1984) has given an account of the relationships between conservation and indigenous peoples. He has also described how indigenous peoples living within different ecosystems or several adjacent and related ecosystems become dependent on the resources for their existence. He noted that some authors prefer to use the term "ecosystem people" instead of local communities because they believe such people have lived within the ecological limitations of their homes and survived for several years. Dasmann's contention that local cultures are not detrimental to resource conservation supports this observation. Other arguments suggest that local communities may not actually develop strong ecological consciousness in the areas they where have lived for long, but culturally their ways of life are ecologically sound. On this basis Dasmann noted that local ecological knowledge is very important and efforts should be made to incorporate such knowledge in the planning of conservation and management of natural environments and resources.

The relationship between conservation and local community interests have often been characterised by conflicts. Such conflicts have occurred in the past and there are several reports, for example, about expulsion of tribes from national parks or local

communities being denied use of resources within parks. In his account of the nature of conflicts between conservation and local resource users, Turnbull (1973) has drawn three examples from eastern Africa. He described how the Ik were expelled from Kidepo National Park in Uganda, and how the Randile were excluded from Sibiloli National Park in Kenya. He also reported that in Ethiopia, battles erupted over wood cutting rights in a protected area. Equally well documented are possible solutions to such conflicts. Brownrigg (1985), for example, has outlined several ways in which local community interests can be integrated into conservation objectives. From the endless list of possible solutions, the most appropriate option appears to be the carrying out of comprehensive studies of the socio-economic structure of the local communities and assessment of their attitudes towards conservation. In addition, the ethnic diversity of the communities and their social structure needs to be known including the traditional location and proximity to the protected areas.

Resource Use and User Rights

Rights of access and use of resources in protected areas by local communities has been a major topic of discussion among several researchers in the past few years and has been documented by many authors, for example, Abel and Blaikie (1986), MacKinnon *et. al.* (1986), Sherman and Dixon (1991), IUCN (1992b), Akama *et. al.* (1995) and Nepal and Weber (1995). It is clear from several sources that local communities benefit from protected areas in many ways including utilisation of resources. In some protected areas local communities are allowed to harvest resources in the buffer zones or community use zones. However, exploitation of resources needs to be controlled in order to protect the goals of conservation. In Kibale National Park, for example, local communities have been allowed limited access to resources in the community use zones located in the southern and south-eastern parts of the Park. This kind of approach to resource use is supported by Mackinnon *et. al.* (1986) who recommended that

buffer/community use zones should be designated in protected areas so that local communities can continue to benefit from the resources. They maintain that each zone should be established for use by specified villages. Several other proposals relating to joint control of resource exploitation by local communities and the protected area authorities have also been reported (e.g. Scott, 1994). In the case of Kibale, there are plans to regulate resource exploitation through a collaborative resource management approach (Reid, 1993). This, however, will require careful planning, monitoring and management of the resources.

3.4.3 Environmental Impact of Recreation and Ecotourism

A common element inherent in various kinds of outdoor recreation is the enjoyment of the natural scenery and the wildlife. Quite often the impact of recreation on the environment is double edged. On one hand it provides an incentive to preserve and enhance natural assets through creation of nature reserves and protection of wild animals. On the other hand the visitors may threaten the very wildlife they come to see and in the process upset the balance of nature (see e.g. Rovinski, 1991). In this subsection, the impact of recreational activities on the natural vegetation, soil, water, and wildlife is presented.

Impact on Soil and Vegetation

Recreation affects environmental quality in many ways, for example, through trampling of vegetation, compaction of soils, danger of forest fires, harassment or destruction of wildlife, pollution of water bodies, and reduction of scenic quality through unsightly development. The literature on environmental impacts of recreation is wide ranging (e.g. Usher *et. al.*, 1974; Edington and Edington, 1977; 1986; Cook-McGuail, 1978; Tivy and Rees, 1978; Liddle and Scorgie, 1980; Carter, 1981; and Goudie, 1990).

Recreation and environment are linked by a series of feedback relationships (both positive and negative) involving soils and vegetation, so excessive recreational use of an area reduces environmental quality and hence diminishes recreational potential. Several studies have revealed that people and soils are linked by a complex positive feedback. High visitor pressure, for instance, increases trampling, which in turn increases soil erosion through creation of bare ground, greater compaction, reduced infiltration, increased run off and thus increased erosion. Extensive erosion reduces accessibility and limits the recreational attractiveness and suitability of an area. In addition, vegetation removal and compaction leads to decreased soil depth and higher soil pH (Quinn *et. al.*, 1980) both of which impair plant establishment.

Human trampling also induces changes in vegetation in areas heavily used for recreation. Earlier studies by Bates (1935) and a recent one by Cole (1995a) have established that trampling has both direct mechanical effects on vegetation and indirect effects through soil changes. Bates identified a common zonation of vegetation changes associated with trampling, with bare ground in areas with maximum recreation use and variations in vegetation height and species composition related to level of trampling pressure. He observed that plants employ various strategies to survive in heavily trampled areas, such as short life cycles (to ensure flowering and reproduction during periods of low disturbance) and acquisition of resistant life forms (the more resistant species tend to have flat leaves, multiple stems, and bear buds at or below ground level).

In every respect, these studies indicate that changes in species composition alter the environmental resistance of vegetation. With repeated trampling, competitive advantages are conveyed to smaller numbers of species which are tolerant to higher intensities of recreational activity. In the end, trampling promotes a negative feedback, where moderate trampling triggers off vegetation changes in favour of trample-resistant species at the expense of sensitive ones.

Impact on Wildlife

The response of wildlife to recreational disturbance appears to be complex, being neither uniform nor consistent. Different species of wildlife have different tolerances for interaction with humans. While some species are completely displaced from areas of concentrated recreational use, others increase in abundance (Hammit and Cole, 1987) and those which are less tolerant are replaced by those better adapted to the new conditions.

The exact relationship between the amount of recreational use and wildlife impacts is still unknown. Few studies have systematically examined the effects of varying numbers of visitors on wildlife. Even fewer wildlife studies have been carried out to determine an accurate population count of animals prior to introduction of recreation (see e.g. Ream, 1979; 1980). Thus, it has been difficult to document a uniform relationship between the amount of recreational use and wildlife habitats.

Nevertheless, when recreational activity occurs in wildlife habitats, two forms of interaction may be observed, namely, direct and indirect interactions which result in direct and indirect impacts respectively. Direct impacts include the effects on animals caused by primary disturbances and interactions with humans. Indirect impacts are the secondary result of disturbances to habitat and other environmental parameters due to recreational use of natural environments. Although indirect impacts are secondary in nature of human-wildlife interactions, they are far more prevalent in affecting most wildlife (Speight, 1973).

The impacts outlined above may lead to three possible responses by wildlife. Firstly, the normal behaviour of animals may be altered to various degrees ranging from habituation to migration from impacted sites (Edington and Edington, 1977; 1986).

Secondly, the animals may be displaced completely to a new habitat. Thirdly, the reproductive level of some species may be reduced. Ultimately, the impacts may result in a change in species composition and overall structure of wildlife populations (Cott, 1969; Olindo, 1991).

The impact of recreation on wildlife has been illustrated by Edington and Edington (1977) and (1986) using examples from three East African Game Parks. They pointed out that although a combination of tourism and conservation in African Parks makes sound economic sense, there are situations where the presence of visitors are prejudicial to the welfare of animals. In Kenya's Nairobi National Park, for example, they noted that lion cubs (*Panthera leo L.*) and zebra foals (*Equus burchelli*) have often been separated from their parents due to disturbance by tour vehicles (see also Olindo, 1991). On the other hand, Thomson's gazelles (*Gazella thomsoni*) in Tanzania's Ngorongoro Crater National Park have on several occasions been forced to adopt stereotype reactions to visitors' cars in the same way they do to their competitors and predators. In Uganda, it has been reported that the presence of tourists have had detrimental effects on the breeding of crocodiles (*Crocodilus niloticus*) in the Murchison Falls National Park. The impact has been noted especially on the eggs and the young often left vulnerable to predators after tourist boats have driven away the females from the river bank into the water. It can be implied from these examples that there are situations where conservation and recreation simply cannot co-exist.

Impact on Water

The impact of recreation on aquatic ecosystems is seldom mentioned nor understood among recreational activities, yet water quality is a major concern in recreation areas. Water is a medium for body contact sports and a drinking source for users. Water-related impacts are somewhat unique from soil, vegetation, and wildlife

impacts in that water quality is directly related to human health (Hammit and Cole, 1987) and is also a major attractant to recreational users.

Many parameters which interact to determine water quality have been studied by Barton (1969), and Brickler and Utter (1975). Some of the impact parameters are direct, occurring on or in water. Other impacts are indirect, characterised by inputs that originate from actions occurring on-shore or in the watershed (Liddle and Scorgie, 1981). Recreation-related impacts are usually in the form of nutrient enrichment of water, suspended solids (turbidity), reduced dissolved oxygen, and bacterial contamination in the form of faecal waste. The manner in which these parameters influence water quality has been discussed by Skinner *et. al.* (1974), Varnes *et. al.* (1978), and Gary (1982).

The three major environmental impacts of recreation mentioned above constitute some of the challenges recreation managers face as they strive to maintain attractive resources against a rising number of visitors. However, there are ways in which environmental impact of recreation may still be minimised. One such way is by use of environmental interpretation as a management technique and a means of educating visitors about the need to protect the environment and its resources. This is the main subject of discussion in the next section.

3.5 Environmental Interpretation

Interpretation is an art which dates far back in time to the early explorers and naturalists such as Darwin (1809-1892) and Wallace (1823-1913) who used it as a means to promote interest in the natural world through the legacy of great interpretive writings (Weaver, 1976). It has, since then, become recognised as a means of resource management and largely as an educational activity.

Several authors have defined interpretation in different ways but the definition of Tilden (1977) seems to be most appropriate. Tilden defined interpretation as "an educational activity which aims to reveal meanings and relationships through the use of original objects by first hand experience and illustrative media, rather than simply to communicate factual information". Graybill (1976) has also described how interpretation has developed from the demand for better public use and understanding of the natural environment. He shares Tilden's view that interpretation could have been founded as part of a wider picture of growing environmental concern. From these authors it can be concluded that interpretation has emerged as part of a campaign to create an environmentally aware society.

However, Prince (1982) looks at interpretation from two different perspectives namely, conservation and recreation. From the conservation point of view he regards interpretation as an educational service aimed at raising awareness of environmental damage. From the recreation point of view, he looks at interpretation as a means of easing visitor pressure on the environment.

Interpretation has been so named because it is education, recreation, orientation, information, and motivation, but none of these adequately describes the process. In recreation terms, its purpose is to make a visit to a site enjoyable by stimulating visitor interest, promoting awareness, and developing an understanding of the natural, historical, or cultural environment. According to Alderson and Low (1976) interpretation helps to create understanding by enjoyable means.

The process of interpretation can be differentiated from other components of environmental campaigns in three ways. Firstly, it is primarily an on-site activity which offers first hand experiences (Aldridge, 1975). Secondly, it may be used as a tool to facilitate an organisation's extension programme in the surrounding community by way

of lectures, and visits. In many respects, it contributes to the development of visitors' expectations, perceptions, and recreational aspirations in the trip planning stage. According to Townsend (1978), interpretation serves voluntary, non-captive audiences in a leisure frame of mind and in a non formal learning situation (Seabrooke and Miles, 1993). As such interpretation is inextricably related to recreation and leisure settings. Thirdly, interpretation invokes four levels of active learning namely, identification, discovery and enquiry, problem solving, and intuitive grasp (see Countryside Commission, 1978).

Cognitive psychologists assert that there are many ways and conditions in which people learn. Sharpe (1976), for instance, has noted that interpretation takes place in a recreational setting. Seen in this context, it can be said that interpretation contrasts with formal education which places high priority on rational, linear and logical brain functions of a captive audience in a systematic presentation.

The Purpose of Interpretation

There are four basic purposes of interpretation viz, educational, recreational, inspirational (propagandist), and managerial (Sharpe, 1976).

(a) Educational

In this case, interpretation is seen as a major component of a wider environmental learning system. Sharpe describes it as "a concentric system beginning at home and encompassing many learning opportunities". But there are important differences between environmental education and environmental interpretation. According to IUCN (1970), environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to

understand and appreciate relationships among man, his culture and bio-physical surroundings. On the other hand, environmental interpretation is the explaining of these relationships to the general public to increase environmental awareness and awaken the desire to conserve the environment and its resources. While these differences exist, several authors indicate that there are generic similarities too between environmental education and environmental interpretation (see e.g. Allen, 1975). Nevertheless, the common view is that interpretation is a special phenomenon arising out of environmental education, although the long history of interpretation development in USA suggests otherwise.

(b) Recreational

From the foregoing discussion it is clear that interpretation is closely linked to recreation. Sometimes it is regarded as recreation in its own right. It is evident from literature that the goals of recreation and education are not poles apart, since both are working toward achievement of a pleasant and enjoyable life. There is also a strong feeling that learning is more rapid if it is pleasurable. Other reports suggest that the finest educational experiences take on a recreational nature. If this is true, then interpretation can be used to increase the competence and pleasure of visitors in addition to reducing their uncertainty.

There have been arguments that while interpretation services are good to attract visitors, they can also prove to be counterproductive to management aims. For instance, it has been reported that interpretation may lead to overcrowding at certain sites which in turn erodes visitor satisfaction. To overcome this, Stevens (1982) proposes that interpretation should be well planned and effectively used.

(c) Inspirational (Propagandist)

Tilden (1977) stresses that the aim of interpretation is not instruction but provocation which may be used to promote an image, a cause, or an action, often of a conservation nature. Apart from these, interpretation may also be used to promote a product (Hind, 1980). Indeed, in seeking to influence attitudes, interpretation relates a set of value judgements. In USA, for instance, interpretation has been successfully used to invoke environmental reform. In Britain it has been used as an adjunct to public relations to gain support for industrial operations (Taylor, 1976) and, arguably, forestry (D. M. Harding, 1994 - personal communication).

(d) Managerial

A close relationship exists between interpretation and management. The benefits of interpretation to management have been reported by several workers (see Jubenville, 1978) who observed that in the UK and USA, interpretation is used as a tool for management and that it helps to eliminate voids and encourages rational decision making. In outdoor recreation management, interpretation offers the following functions:

- it increases user satisfaction which results in support for management aims and improves the quality of use.
- it explains management actions, thus improving management credibility and reducing the need for active public relations exercises.
- it protects the resource from visitors and the visitor from the resource, by explaining management options and user options, and specifically by developing positive values and informing users of the consequences of their actions (Nature Conservancy Council, 1975).
- it increases visitor enjoyment by increasing awareness of opportunities available

within an area.

- it provides visitors with a better appreciation of places, objects, people and cultures they have chosen to experience.
- it attracts more visitor attendance and generates more income from admissions and other ancillary facilities and services.

Despite these benefits, it appears that interpretation is still not widely recognised. Available information indicates that interpretation has failed to gain wider acceptance than expected due to lack of application to management tasks, and lack of administration and management skills. To this end, Stevens (1982) suggests that if effective interpretation is to be realised, then it must be planned and incorporated into the framework of a management system.

3.6 Conclusion

One significant viewpoint which emerges from the above discussion is that recreation has come to be a vital force in peoples' lives and that ecotourism provides recreation opportunities in protected natural settings. As increased amounts of leisure time contribute to the growing demands for recreation, larger amounts of resources of varying quality and diversity are required to meet these demands. Forestry will be expected to contribute substantially towards meeting these demands. In addition, recreation managers ought to have a good understanding of the nature of demand for recreation, the characteristics of the resources available for different activities and the people who participate in those activities.

Environmental conservation remains a key issue in the development of any recreational and ecotourism programme. As already noted above, there are close links between ecotourism, the environment and development. A clear understanding of these

links is vital because ecotourism and the environment do not only depend on each other but benefit from each other as well. Control of visitor numbers will require proper planning, based on information about the level and nature of visits. In this way the amount of environmental damage will be minimised. Damage to the environment would weaken the economic viability of ecotourism. Appropriate measures will therefore need to be instituted to ensure the preservation and protection of the resources upon which ecotourism depends. Such measures will also require effective use of environmental interpretation. In addition a strong support of the local communities around protected areas is essential for successful conservation and development of ecotourism. The needs of local communities should be considered and they must be involved directly in conservation and management of ecotourism.

CHAPTER 4

METHODS AND PROBLEMS OF ASSESSING RECREATION AND ECOTOURISM POTENTIAL, RECREATIONAL USE, AND ENVIRONMENTAL IMPACT

4.1 Introduction

The objectives of this study can be achieved in two main ways: through surveys and direct observations in the field. This chapter is intended to give an overview of the main research methods that can be applied in a study of this kind. Of particular importance are the methodologies for environmental evaluation, the visitor and local survey, and the appraisal of environmental interpretation. In section 4.2 the methods and problems of evaluating recreation and ecotourism potential are given. In sub-section 4.3.2 the merits and limitations of the questionnaire survey are broadly discussed because the same methodology applies for all three types of survey used in this study. The methods of assessing the impacts of recreational activities on the environment are presented in section 4.4. In section 4.5 the major conclusions of the chapter are given.

4.2 Methods and Problems of Assessing Recreation and Ecotourism Potential

There seems to be no standard method for assessing the potential of an area for recreation and ecotourism. Apparently what exists are approaches that consider certain aspects of the landscape in terms of recreational attractiveness only. The approaches have been broadly classified as those concerned with the evaluation of the landscape in specific places, and those that examine the capability of an area to support particular recreational activities (Patmore, 1983). The former has far wider application in landscape conservation and planning (Patmore, 1970; Robinson *et. al.*, 1976; Welsh Office Planning Services, 1980), whilst the latter is regarded as an objective approach.

The major practical problems of landscape evaluation have been discussed by Appleton (1975), Patmore (1975 and 1983), Landscape Research Group (1987), and Glyptis (1991). It is clear from these authors that the key attributes of the landscape have not been easy to identify, quantify or rank on a scale of attractiveness. Glyptis (1991) attributes this to the complex nature of the landscape which she describes as a composite resource that defies dissemblage into constituent parts such as beauty, ruggedness, flatness, wildness, and serenity. In her view, landscape attractiveness lies in the integrated whole rather than the individual components, a position alluded to earlier by Unwin (1975).

One of the earliest approaches, and probably the most widely used in landscape planning, was the appraisal of the coastline by Steers (1944). He subjectively studied segments of the British coastline and recorded his impressions. This approach, however, has been criticised for its simplicity and reliance on the landscape as the sole element in categorising and evaluating resources for outdoor recreation (Kaplan *et al.*, 1972; Lee, 1990). As a result the method is considered inappropriate for assessing the potential of richly varied inland landscapes (Robinson *et al.*, 1976). Subsequent attempts were directed to smaller areas and took slightly more complex approaches (Blacksell and Gilg, 1975; Dearden, 1980) amenable in most cases to computer processing of results. Other objective approaches have been based on land capability and surface potential. These are discussed separately under the next sub-headings.

(a) Land Capability Method

This approach was pioneered by Duffield and Owen (1970) in Scotland. They identified natural environments that can sustain various forms of outdoor recreation. Using two by two kilometre squares from the Ordnance Survey National Grid as units of measurement, they developed methods of assessing capability for land-based recreation,

water-based recreation, scenic quality, and ecological significance. Each method was based on desk research on a number of pre-defined characteristics. The capability of land for recreation was judged, for example, according to suitability for camping and caravanning, picnicking, pony trekking, walking and hiking, game shooting, rock climbing, and skiing. The criteria for suitability were pre-defined for each activity. The overall recreational capability was measured by a cumulative score of the number of criteria that could be met in each square (Hockin *et. al.*, 1977; Hogg, 1977).

Methodologically, this approach suffers the same shortcomings as landscape evaluation (Landscape Research Group, 1987), because it is limited by research resources to desk top appraisal rather than field observations and therefore constrained to readily available data on a narrow range of activities. Nevertheless, it does provide a comparative evaluation of resources and it is possible to locate and identify areas suitable for recreation on the basis of physical characteristics (Coppock and Duffield, 1975). Further, differing scores can be awarded to differing categories and their component criteria, and the resulting environments can be easily related to population pressure and other factors of recreation demand. This flexibility is considered a major advantage of the method.

(b) The Potential Surface Technique

The Potential Surface Technique was developed by the Countryside Commission (1974) basically to evaluate resources for countryside recreation in South Wales. Four indices were used to derive scores for accessibility by population, accessibility to roads, recreational attraction, and choice and variety of environmental types. The major problem with this technique is that it gives inconsistent results derived for each objective. In spite of the limitations and inherent subjectivity, the method is still considered a much better basis for decision making than assessments made on individual perceptions.

(c) Species Richness Approach

This method is a derivative of an earlier one developed by Mackinnon and Mackinnon (1986) and subsequently used by Howard (1991) for assessing the potential of 12 of Uganda's principal forest reserves for nature conservation. Species lists of four indicator groups (trees, birds, butterflies, and primates) were used by Howard to derive a score for each forest representing its importance for nature conservation. The lists were obtained from field inventory and existing sources such as herbaria and text books. Individual species scores were summed up to obtain the importance of each forest for species conservation. The highest scoring forest was awarded a final score of 100 and the others scaled down accordingly. The most significant aspect of this method is that it takes into account the species richness of each forest and the rarity value of the species represented in the forest.

The approach can be considered appropriate for the evaluation of Kibale for recreation and ecotourism for two main reasons. Firstly, Kibale is richly endowed with biodiversity and has one of the highest number of species of trees (250), birds (300), butterflies (45), and primates (11) plus several other large mammals which attract visitors. Secondly, forest recreation and ecotourism in Uganda is centred on wildlife resources and the species richness approach would therefore be appropriate for evaluating the recreation potential of Kibale. This method is described further in Chapter 5.

(d) Multicriteria Evaluation Model

One of the ways in which the evaluation of natural areas has been attempted is by use of the Multicriteria Evaluation Models described by Smith and Theberge (1987). The models involve ranking of a series of alternative methods by considering a number of

criteria. Each model has a set of underlying assumptions and is designed to deal with particular kinds of information. Two principal types of models may be used namely, compensatory and non-compensatory. Compensatory models involve calculating overall values using scores or weights assigned to each criteria. All criteria are measured on an interval or ratio scale. Non-compensatory models on the other hand, are used when the criteria have different scales and the overall values derived cannot be compared.

The Simple Additive Weighting Method (SAWM) is the most common compensatory model used. All criteria are assigned values and weights. In order to evaluate an area or site the scores for each criteria are multiplied by their respective weights and summed up. A combination of this method and the species richness approach already described above was felt appropriate for this study. Consequently it was selected in order to attempt the assessment of the potential of Kibale for recreation and ecotourism (presented in Chapter 5).

4.3 Assessment of Recreational Use of a Forest/Park

In order to gain a more comprehensive knowledge of forest recreation use, site specific study is essential. Recreation managers require sufficient information on visitors in order to decide what kinds and grades of facilities to provide. Thus, a reasonable understanding of visitor characteristics, their behaviour, and attitudes towards the management of the site and facilities is vital. In outdoor recreation studies, questionnaires have been used to gather information about the use of sites or facilities which cannot be determined from observations alone. There are two types of questionnaires: the interviewer-administered and the self-administered (self-completion) questionnaires. The interviewer-administered questionnaires are the most commonly used in on-site recreation surveys. The questions are designed to be asked of a respondent by an interviewer. The opposite is true of the self-administered or self-

completion questionnaires. They are designed to be completed by respondents either at the time of the visit, or at home and then returned by post.

On-site questionnaire surveys were developed by the US Outdoor Recreation Resources Review Commission in the early 1960s (Burton, 1971). Later, it was widely used in several studies in the UK which included those by the Devon County Planning Department (1960), British Tourist Authority (1965), Central Council of Physical Recreation (1965), Hammond (1965), Burton (1966; 1967), Straw (1967), Wagar (1967), the Greater London Council Planning Department (1968), and Mutch (1968). The widespread use of the technique illustrates its significance.

Burton (1971), Bardon and Harding (1981) and Scottish Natural Heritage (1993) have pointed out the uses to which site surveys can be put and these are many and varied. It is clear from all the above reports that the questions commonly asked in on-site questionnaire surveys attempt to determine user behaviour and activities on site, journey characteristics (route, mode and cost), factors of supply affecting decision making, choice of activities and site, visitor perceptions and preferences, and visitor characteristics affecting the propensity to participate. In recreation terms, these factors augment Davidson's (1970) earlier view that site surveys can be used for marketing recreation sites and facilities and for planning purposes.

(a) The Uses and Limitations of the On-Site Questionnaire Survey

There have been several claims that recreation research has provided little statistical information for recreational planning (Bardon and Harding, 1981). These claims have been supported by the notion that the development of reliable forecasting techniques has been slow because of the use of the on-site questionnaire survey. Nonetheless, several researchers have found that the method is valuable since the data

produced have assisted in many ways, for example, for evaluating recreation carrying capacities (Trakolis, 1979), definition of standards and activity requirements and measurement of social and economic benefits derived from recreation (Wan Sabri, 1987) and tourism (Lea, 1988).

In a few instances, the usefulness of questionnaire data in the calculation of carrying capacities has been questioned because of lack of other information such as visitor observation or geomorphological and ecological evidence (Trakolis, 1979). Despite the shortcomings, many site surveys often include questions on perception of crowding and this has contributed to a greater understanding of perceptual carrying capacity.

Several studies aimed at measuring the benefits derived from recreation have been criticised for using methods other than on-site questionnaires. There is a strong feeling that the level of investigation and understanding in this field can best be achieved by making greater use of on-site questionnaire surveys. There are several advantages of the on-site questionnaire survey method reported by Bardon and Harding (1981) which include the following:

- Surveys reach people who would possibly not be reached by other methods and therefore help obtain the opinions of the unaffiliated public or typical visitor.
- By following the scientifically accepted principles of conducting surveys, it is possible to give a representative picture of the whole population without the need to involve everyone. This also gives survey results a legitimacy which is not always present with other forms of participation.
- Visitor opinion can be canvassed in a systematic way and the public can raise and discuss issues rather than simply comment on the final proposals.
- Surveys can be used to fulfil a public relations role for a planning or managing

body. There is evidence to show that visitors to recreation and tourism sites like to be consulted (Bardon, 1978) and appreciate efforts made to allow them to articulate their views.

- Surveys give respondents the opportunity to learn about information relating to planning and management issues directly affecting them, for example, where opinions are being sought attempts are made to explain to the visitors the purpose of the survey.
- It is a flexible method. This is perhaps the most relevant in the recreation and tourism context where individual sites differ markedly and in part explains the technique's popularity and widespread use.
- Surveys are comparatively easy to undertake and there is a wealth of literature to assist in the planning, execution and analysis of data collected.
- Interviews can be conducted almost anywhere and the actual interviewing technique can be standardised depending upon circumstances and individual situation.

The technique is not, however, without its limitations. Many of the criticisms of on-site surveys relate to the fact that a large number of such surveys have been poorly conceived and planned and have hence produced results of dubious value. Oppenheim (1992) has drawn attention to the significance of planning and selection of methodology to be used in surveys in general and expressed concern about the way in which survey literature abounds with portentous conclusions based upon faulty inferences from insufficient evidence wrongly assembled and misguidedly collected. Brightbill and Mayer (1953) have also raised questions concerning the scientific validity of data. They suggest that unless questionnaires can be scientifically in keeping with the accepted and tested principles of conducting surveys, it would be better to forgo the method altogether.

There are claims that problems usually arise in the framing of attitude questions which are notoriously difficult to handle in site surveys. A further problem is that respondents are required to formulate opinions, often in a relatively short time, on issues which have not been thought out well. As stated by Bardon and Harding (1981) some people find it difficult to respond to questions and yet decision makers often rely heavily on results derived from such surveys. There are, however, methods and techniques which can be used to overcome problems with surveys designed to provide information on public attitudes and opinions (see e.g. Bardon, 1978).

It is clear from the foregoing discussion that the future of on-site questionnaire surveys will depend on three key areas. First, increased attention should be given to the planning, design, and interviewing techniques. This will involve precise definition of objectives, careful consideration of the population to be sampled and the sampling technique to be employed. Effectively this will mean close adherence to the basic principles of conducting surveys as laid down in social research texts, for example, by Hennerson et. al. (1978), Atkinson (1979), Sudman and Bradburn (1983), de Vaus (1985), Werner and Schoepfle (1987), Nichols (1991), Devereux and Hoddinott (1992), Oppenheim (1992), Bell (1993) and Bulmer and Warwick (1993).

The second major aspect of on-site surveys which will demand more attention is the standardisation of approach and co-ordination of effort. Much has already been achieved in this field by the UK Countryside Commission, Scottish Natural Heritage, the Tourism and Recreation Research Unit at Edinburgh University, and Social and Community Planning Research in London. Considerable scope still exists for further standardisation of the approach and greater dissemination of information, especially technical matters relating to the methodologies in order to derive some cumulative benefit from individual researches and to encourage the development of techniques.

4.4 Methods of Monitoring and Evaluating Recreational Impacts

A number of approaches have been developed in recent years to monitor and evaluate the environmental impact of recreation. In particular, site inventorying has been considered important because it provides a means of evaluating the current condition of the resource in relation to management objectives so that problems can be identified. Monitoring involves periodically repeating the inventory and comparing the current conditions and previous inventory data. Over time, information about current conditions and trends helps in the selection of limits of acceptable change. It also permits effectiveness of management programmes to be assessed and areas where changes in management are needed can also be identified. Places where problems are particularly pronounced or where conditions are rapidly deteriorating may be identified as areas of concern and this is essential in management planning.

In this section, methods of monitoring and evaluating recreational impact on water, soil, vegetation and wildlife are examined. Sub-section 4.4.1 considers campsite monitoring techniques and sub-section 4.4.2 summarises methods of monitoring trail conditions. Sub-section 4.4.3 takes a brief look at the Faecal and Total Coliform Tests as the principal methods of assessing the impact of recreational activities on water. Finally, in sub-section 4.4.4 a concise account of the techniques used in assessing species diversity is given.

4.4.1 Campsite Monitoring

Camping is one of the most popular recreational activities and usually involves highly concentrated use of a site. Consequently, the impacts can be quite severe. A good monitoring system (which must be cost effective, have a meaningful measure of impact, and should be reliable) is therefore essential. The value of information collected,

however, will depend on how carefully impact parameters are selected. As pointed out by Hammitt and Cole (1987), the monitoring technique used should enable the assessment of how much impact has occurred. The technique must, therefore, be sufficiently precise to allow independent observers to reach similar conclusions about site conditions. Furthermore, it should be able to aggregate different parameters. The parameters may be rated on a scale and the mean rating taken as an overall index. In this respect, Cole and Shreiner (1981) have recommended the use of direct physical measurements as one of the most accurate and reliable ways of getting data on impact parameters. This and other approaches are treated individually below.

(a) The Physical Measurements Approach

This approach has been used in several studies in the USA including work by Cole (1982). It involves measurement of physical damage and areal extent of impact. In the measurement of physical damage, both the bare area and the entire camp site are defined and used as indicators of impact. The physical impact of recreation on soil, trees, seedlings and ground vegetation are measured on the campsite and a nearby undisturbed site as a control. According to Bratton *et. al.* (1978) the approach is a valuable way of estimating impact in a place where many people cluster together and create large multiple-tent site campgrounds. Changes over time may also be monitored in a similar way. The method's major advantage is that it consumes less time and is cheap. Its major weakness is that little information is provided on the magnitude of impact thus making it difficult to tell how much damage has already occurred.

(b) The Condition Class System

The Condition Class System is suitable for large dispersed recreation areas such as the open countryside. It is also known as "Frissell's System". It involves description of vegetation and soil conditions. Frissell's system was developed in Minnesota, and Montana (USA). It only works well in coniferous forests in cool climates where growing seasons are short, litter accumulation is high, and the ground vegetation is highly sensitive to disturbance (Frissell, 1978). No empirical measurements are involved so it is difficult to quantify and compare the magnitude of impacts on different sites. In addition, the conditions may match several site descriptions and deter the assignment of sites to particular classes.

In an attempt to overcome these problems, Parsons and MacLeod (1980) developed a method known as the Multiple Parameter Rating System (MPRS). The method has been tested in the USA and was adopted and used for the environmental appraisal presented in Chapter 5. For this reason, it has been felt necessary to examine the method slightly further in order to highlight some of its strengths and weaknesses.

(c) The Multiple Parameter Rating System (MPRS)

The MPRS was pioneered by Parsons and MacLeod (1980) and later adopted by Cole (1983). Information is collected on vegetation density, area of the campsite, barren core area, development, presence of organic litter and duff, number of social (access) trails, and tree damage. Each parameter is assigned a rating, depending on the amount of impact, and weight. The rating is then multiplied by the weight to obtain the impact index of each parameter. All the impact indices are then summed to obtain the overall impact index for the camping site (Parsons and MacLeod, 1980).

The main advantages of this method have been outlined by Hammitt and Cole (1987). The first is that the method accounts for sites where one type of impact is higher than the other. The second is that it contains more information, so it is possible to track change in individual parameters such as amount of tree damage over time. The third is its flexibility, because it allows re-evaluation of parameters without necessarily re-examining every site. Its major weakness is in the accuracy of the data obtained which often depends on personal intuition. This raises some concern because there may be wide variations in parameter rating due to differences in individual value judgements.

Cole (1983) modified the method with the aim of increasing its objectivity and enabling each parameter to be recorded independently. He worked out an ordinal scale for classifying impacts ranging from 20 (representing minimal impact) to 60 (representing maximum impact). He subdivided the scale into four classes: light (20-29), moderate (30-40), heavy (41-50), and severe (51-60). If a site, for example, has an impact index of 47 it means it is under heavy use.

Cole's (1983) version of the multiple parameter rating system has had a much wider application. Its flexibility permits use under different environments and can be modified further to suit particular needs. The definition of ratings can be made more or less stringent depending on the value judgement of the user. These features and the advantages mentioned earlier qualified this method for use in this study.

(d) The Ground Cover Index (GCI)

One way of estimating the magnitude of recreational impact is by analysing the extent to which ground cover has been disturbed. This can be achieved using the Ground Cover Index (GCI). The GCI was developed by the US Forest Service (Douglass, 1975). Its initial purpose was to assess the optimum recreation carrying capacities of

campsites. It was widely used to estimate site impact conditions in some of the American National Parks. The following multiple-regression equation was used:

$$\text{GCI} = 81.28 + (-0.71\text{A}) + 0.21\text{B} + (-11.73\text{C}) + (-0.24\text{D}) + 0.82\text{E}$$

where A = Potential Pedestrian Impact (PPI)

B = Depth of B horizon (cm)

C = Percentage of rock surface

D = Percentage of silt in C horizon

E = Slope (%)

Thus, according to Douglass (1975), a GCI of 75 per cent obtained using this equation would be regarded as satisfactory and would also be the minimum acceptable limit. Values below 75 would be considered unsatisfactory as they indicate potential site deterioration.

There are some problems with this approach. Firstly, Douglass does not make it clear how the equation can be used to obtain the PPI, thus making the method difficult to apply. Secondly, it appears the PPI for the site under investigation can only be known after a detailed soil survey. This requirement limits the applicability of the method to only those areas where detailed soil surveys have been undertaken. Thirdly, the assumption in the equation that for every unit increase in PPI, there is a corresponding decrease of 0.71 in the GCI (Douglass, 1975) is questionable since it was derived under American conditions and difficulties may arise when the method is applied elsewhere.

(e) Photography

Photography can be used to complement data collected in the field. It possess a unique quality in conveying information not measured as well as validating field assessments. Brewer and Berrier (1984) have documented different types of photographic techniques used in recreational impact assessment, but the three major ones are photopoints, quadrat photography, and campsite panorama. In order to test the the hypothesis stated in Chapter 5 (sub-section 5.4.2), a more quantitative approach was required. Since photography is essentially a qualitative method of presenting information, it was felt that the method would not be appropriate and as a result it was not selected.

(f) Remote Sensing

Remote sensing has been used for a long time as a major technique for environmental planning and monitoring. For several years, aerial photography has been used to monitor changes in the environment caused by human activities (e.g. deforestation and other changes in land use). Recently, however, the use of satellite imagery has overtaken the use of aerial photographs for monitoring environmental changes (e.g. changes in vegetation cover). Though expensive, the method is believed to be more reliable than aerial photography (see e.g. Burnside, 1985; Harris, 1987; Dale and McLoughlin, 1990; and Martin, 1991). Nonetheless, aerial photography is still widely used because it is a cheaper technique. Price (1983) has demonstrated how repeat photos and images can be used to show places where new trails are developing or existing trails widening or becoming braided. It can be implied from his work that remote sensing can be effectively used in monitoring changes in campsite conditions, but the high costs of images impeded the selection of the method.

4.4.2 Trail Monitoring

Trail monitoring provides information on the relationship between trail conditions and environmental factors on the one hand and the design features on the other. It is clear from literature that trails deteriorate more rapidly if they are associated with certain physical conditions, for example, steep slopes (Hammitt and Cole, 1987). Thus, monitoring helps to correlate problems with conditions, and the knowledge gained can be used to guide future design and location of new trails. Three types of techniques used in trail monitoring are replicable measurements of samples, rapid surveys of large samples, and complete census of trails. Of these three, the census technique was selected and used in this study for two main reasons. Firstly, it enables physical environmental parameters to be quantified. Secondly, it permits empirical analysis of the associations between environmental parameters so that trail conditions can be estimated.

The Census Technique

The census technique is a quick way of evaluating conditions on the entire trail system. It was used by Bratton *et. al.* (1979) to study trails in selected recreational areas in the USA. For each 0.5 km trail segment, they estimated the effect of water erosion, rutting, horse and foot impact, vehicle tracks, muddiness, area of bare rock and number of trees with exposed roots due to loss of top soil. The proportion of the trail system having these features was estimated. A similar approach was also used in the UK by the Nature Conservancy (1967) and by Summer (1980) to monitor the rate of vegetation loss and trail erosion due to public pressures in the countryside. However, an important point to note here is that the success of the census technique depends on a clear definition and mapping of the problem.

4.4.3 Measurement of Species Diversity and Composition

There have been several attempts to measure species diversity and composition (see e.g. Krebs, 1972). Magurran's (1988) book on "Ecological Diversity and Its Measurement" gives a thorough treatment of the subject and lists most of the methods used in different ecological studies. For this study, Dowdeswell's (1984) diversity function (D) was used for the assessment of woody species diversity on the camping sites in Kibale's recreation area and the Morisita-Horn similarity coefficient was used for assessing the woody species composition. A further account of these methods is given in Chapter 5.

4.5 Conclusions

This chapter has explored the various methods of assessing recreation potential, recreational use and environmental impact. The problems of assessing recreation potential still remain unsolved due to the lack of a well designed and reliable approach. There is a need to develop a standard approach that can be used under different environmental conditions. The great strides already made in the development of visitor survey methods is commendable. However, more work still needs to be done in order to integrate the questionnaire method carefully with other forms of on-site surveys so that more reliable information can be collected and better results achieved.

From the impact point of view, the need to develop more elaborate techniques for monitoring and evaluating the environmental effects of recreational activities is paramount. The current approaches in use were designed for wilderness or open countryside studies in temperate environments and although they can be modified for studies elsewhere and in areas such as the tropics, the accuracy of information gained is still debatable.

Proper assessment of woody species diversity and composition in a recreational environment is significant from the ecological stand point. In forest recreation, species diversity and composition are features that contribute to visitor enjoyment and satisfaction. Therefore, sustaining the diversity and composition of woody species in a forest ecosystem is important. Furthermore, it helps to create greater conservation awareness and informs management of the consequences of expanding campsite infrastructure. Although clearing parts of the natural forest to create room for additional facilities may be seen as a routine management practice, it is ecologically unacceptable as it leads to loss of endemics and reduction in number of individuals within a species. In the long run, the practice may result in considerable loss of biodiversity.

CHAPTER 5

ENVIRONMENTAL EVALUATION OF KIBALE NATIONAL PARK

5.1 Introduction

This chapter presents an environmental evaluation of Kibale National Park (KNP). It seeks to answer the kind of questions usually asked when considering the management of protected areas for ecotourism. In this study an attempt was made to answer the following questions: what is the potential of KNP for recreation and ecotourism? What is the current level of environmental impact? What management options should be adopted if impact is to be minimised? How can the management of KNP reconcile the objectives of conservation and ecotourism? The answers to these questions have been sought using an environmental approach that looks at the environmental integrity of KNP as a priority in the management of ecotourism. As stated by Lajeunesse *et. al.* (1995) recreation and ecotourism depend on sound environmental management. As the number of visitors to KNP is expected to increase, and greater pressure exerted on the park environment, this study becomes both essential and timely.

5.2 Background to Kibale National Park

According to local oral accounts, Kibale Forest was inhabited by a group of cattle keepers between 1900 and 1925. An outbreak of rinderpest in 1925 killed most of the animals and some people were forced to leave the forest to settle elsewhere. Kibale Forest was gazetted a crown forest and placed under the care of the Uganda Forest Department in 1932. By 1934, all the inhabitants were forced to leave the forest because of a high increase in the number of wild animals that raided and destroyed the crops. However, the local population living in the neighbourhood continued to depend on the forest for firewood, building poles, ropes, medicines, and bushmeat. In 1948 Kibale

Forest was re-gazetted as a Central Forest Reserve and the boundaries demarcated. By independence in 1962, the first licences had been issued for commercial logging of the forest.

In 1971 Kibale received an influx of agriculturists (the Bakiga) from Kigezi in the south-western part of Uganda. The tremendous population increase in Kigezi at the time forced some of the Bakiga to look for land in the neighbouring districts and they moved into Toro District which was relatively less populated. The local administration and the Omukama (King of Toro) allowed them to settle in the grassland areas to the west of the forest reserve. As the number increased and the area became saturated, new immigrants began to settle in the forest itself (Van Orsdal, 1986). Without support from the central Government, the Forest Department failed to control the influx effectively. By 1976 the rate of influx had increased markedly, and settlement spread deep into the forest as well as into a nearby game reserve.

In 1982 about 300 families were evicted from the forest following a Government directive to restore the status of Kibale Forest Reserve. When the civil war broke out in 1985 many of the families returned to their plots in the forest. A census of encroachers carried out by the Forest Department in 1987 revealed that there were over 900 households established in the forest reserve. The families were evicted again but this time they were moved and settled in a newly created district of Kibaale (note the difference in spelling). In July 1992, the Kibale Forest Reserve was declared a Forest Park and in November 1993 it was made a National Park. As a forest park and later a national park Kibale acquired a multiple use status which promoted ecotourism alongside conservation.

5.3 Description of Kibale National Park

5.3.1 Geographical Location

Kibale is located southeast of Fort Portal town in western Uganda between 0° 13' to 0° 41' N and 30° 19' to 30° 32' E (Ghiglieri, 1984). It is bordered by 20 parishes distributed within the counties of Burahya, Mwenge and Kibale all in Kabarole district.

5.3.2 Area

KNP covers an area of 560 km², of which 320 km² is forest and 210 km² is grassland and swamps. The total boundary length is 219 km, out of which 148 km are marked with live trees. The remaining boundaries (71 km) are identified by physical features such as rivers and roads. Most of the boundary adjoins agricultural small holdings (Kapalaga, 1994).

5.3.3 Topography and Drainage

The Park has the characteristic undulating terrain of the main Uganda plateau extending along a 36 km north-south tilt from 1 100 m to 1590 m in elevation broken by well watered hills and valleys whose variations in relief rarely exceed 150-180 m vertically (Ghiglieri, 1984). About 464 km² of the park lies at a range of 1250-1500 m; 69 km² lies below 1250 m and 27 km² above 1500 m above sea level. There are several streams and swamps in the valleys (known by various local names) which drain into Lake George in the south via the Dura and Mpanga Rivers (Howard, 1991).

5.3.4 Geology and Soils

The area is underlain by strongly folded and metamorphosed sedimentary rocks which is part of the Toro system (Department of Lands and Surveys, 1967). In turn the basement rocks are overlain by red ferralitic sandy loams of low to moderate fertility, except for a small area in the west where ferralitic eutrophic soils occur on volcanic ash. The soils, together with the tropical climate have the potential for supporting various types of forest vegetation and farming.

5.3.5 Climate

The rain falls in two periods in a year: the light rains from March to May and the heavy rains from September to November. Like in many parts of Uganda, the climate is modified by the seasonal movement of the ITCZ, altitude and topography. The annual rainfall ranges from 1570 mm to 1700 mm, falling in 180 days. The annual mean daily temperature varies between 14 and 27°C, the minimum range is $16.2 \pm 0.4^\circ\text{C}$ and the maximum range is $23.3 \pm 0.6^\circ\text{C}$ (Howard, 1991).

5.3.6 Vegetation and Ecology

(a) The Flora

Kibale is a medium altitude moist-evergreen forest with mixed forest communities. It is one of the forest remnants on the outer fringes of the once great equatorial forest stretching from the Congo basin to parts of East Africa. According to Howard (1991), Kibale is one of the richest forests in eastern Africa and one of the richest in the world with 209 tree species (49% of the country's total) recorded. About 77 per cent is occupied by various types of forest vegetation with a medium altitude

moist-evergreen forest in the north and semi deciduous forest at the lower altitudes (Langdale-Brown *et. al.*, 1964 and Osmaston, 1959). Mixed forest communities with species such as *Olea welwitschii*, *Aningeria altissima*, *Strombosia scheffleri*, *Newtonia buchanani*, *Chrysophyllum spp.*, *Celtis spp.*, *Diospyros abyssinica* and *Markhamia lutea* occupy about 20 per cent of the park at intermediate altitudes in the centre. The higher lying areas in the north support *Parinari*- dominated forest. The lower altitudes in the south of the Park are dominated by *Pterygota mildbraedii* (9% of the Park) and *Cynometra alexandri* (2% of the park). In addition there are colonising and poor forest types covering about 25 per cent of the park (Howard, 1991).

(b) The Fauna

The fauna of Kibale is much better known than any other forest reserves in Uganda. The forest/park supports one of the richest arrays of fauna of any east African forest (Van Orsdal, 1986). There are 11 primate species (67% of the country's total), of which the red colobus (*Colobus badius*) occurs nowhere else in Uganda (Howard, 1991). There are 325 bird species (54% of the country's total) in 46 families (Skorupa, 1983) and 45 species of forest swallowtail butterfly and *Charaxes* (66% of the country's total).

5.3.7 Economic Importance

Before Kibale became a national park, large-scale commercial logging had been carried out for over 30 years. The first sawmill was established in the northern part of the forest and operated until 1985 converting logs extracted from about 72 km² of the forest. Wild coffee (*Coffea canephora*) has also been harvested since 1932 when the first licences were issued to private individuals. Over the past 20 to 30 years about 40 tonnes of coffee were harvested per annum, but the production is very low now. Although

under a stricter protection today, Kibale is still the main source of firewood, building poles, bush meat and medicines for the majority of the local people living in the immediate neighbourhood. Ecotourism is the major economic activity at present and about 5 000 tourists visit the park every year.

5.3.8 Present Status

As already mentioned in section 5.2 above, KNP has been severely affected by agricultural encroachment and commercial logging and to date the status of 67 per cent of the forested land remains unknown. About 17 per cent has been felled for saw milling and a further 16 per cent affected by encroachment. Substantial areas of all the forest types remain in a relatively undisturbed state, except for the *Parinari* forest type, where about 82 per cent has been felled. Some enrichment planting is going on in the areas formerly encroached. There are two nature reserves which altogether cover about 62 km² (11%) of the Park's total area. A research plot (16 km²) of mostly undisturbed mature forest is located adjacent to the Makerere University Biological Field Station (MUBFS) at Kanyawara. About 30 km² of the Park area in the southeast is being managed for recreation and ecotourism and a campsite has been established in the grassland area close to the Kanyancu River with visitor facilities.

5.4 Environmental Evaluation

The evaluation of natural areas for the purposes of identifying and planning management of areas of high ecological importance has been well documented by Smith and Theberge (1986 and 1987). Several methods that have been used tend to consider sets of pre-determined criteria as a means of ranking natural areas for conservation and other uses. Of particular interest to this study are the methods that consider several parameters used to assess the impact of recreation in protected areas. As stated in

Chapter 1, one of the objectives of this study is to assess the potential of KNP for recreation and ecotourism and another is to assess the environmental impact of recreation. In this Chapter, three types of environmental evaluation have been undertaken and the results are presented in section 5.4 below. In sub-section 5.4.1 the evaluation of KNP's potential for ecotourism is attempted followed by the assessment of recreation impact on the camping sites (subsection 5.4.2) and the trail (subsection 5.4.3). The appraisal of the effect of campsite development on woody species diversity and composition is considered in subsection 5.4.4.

5.4.1 Evaluation of Recreation and Ecotourism Potential

According to Irving (1985) the development of a forest for recreation and ecotourism begins with the assessment of the potential of the forest to offer recreation opportunities. In view of this, the following hypothesis was developed and tested:

Hypothesis: KNP has the potential to attract visitors and support recreation and ecotourism.

5.4.1.1 Methodology

(a) Selection of the Evaluation Method

A multi criteria method known as the Simple Additive Weighting Method (SAWM) (Smith and Theberge, 1987) was used to assess KNP's potential for recreation and ecotourism. The method considers a set of criteria and assigns weight to each criterion. The major problem with SAWM is that the weights used in the calculation are subjectively decided so the final score tends to rely on one's person judgement and intuition.

(b) Source of Data

Howard's (1991) species lists of forest biodiversity indicator groups (primates, birds, trees, and butterflies) were used. In order to have a better comparison and a more meaningful test of the hypothesis stated above, four other national parks (Fig. 5.1) namely, Semliki National Park (SNP), Bwindi National Park (BNP), Mount Elgon National Park (MENP), and Rwenzori National Park (RNP) were entered in the calculation and their potentials for ecotourism were assessed as well. SNP, BNP and MENP, were once forest reserves and forest parks, later made national parks like Kibale. The number of individuals and species (in bold) considered per indicator group were: primates (84, **12**); birds (817, **329**); trees (1418, **447**); butterflies (87, **86**) and charaxes (117, **41**).

(c) The Evaluation Procedure

The evaluation was done in two stages:

Stage I:

Howard's ten criteria were adopted to derive scores of importance for non-extractive multiple use of the five national parks. The criteria were re-classified under four main headings namely, General Issues, Recreation and Ecotourism, Research History/Potential, and Educational Value (Table 5.1). A score of 0 was awarded to each national park where the criterion was not met and 1 where it was met. They were then summed up to get the total score of importance for non-extractive multiple use for each national park. The assumption in this method is that the scores of importance for non-extractive use also indicates the park's potential for recreation and ecotourism. The total scores were re-scaled so that the national park with the highest potential for non-

extractive multiple use was 10.0.

Stage II:

For every species of primate, bird, tree, and butterfly/charaxe appearing in Howard's list, scores were awarded as follows: 4 (primate), 3 (bird), 2 (tree), and 1 (butterfly/charaxe). Ranking of the scores was guided by answers given by a sample of 200 visitors interviewed at KNP between October 1994 and June 1995. Visitors were asked the following question: "*During your visit here, which type of wildlife interested you most?*" The responses were: primates (170), birds (15), trees (11), and butterfly (4). The scores for each indicator group were then summed up for each national park to get the total score of importance for recreation and ecotourism.

5.4.1.2 Results

Table 5.1 shows that KNP has a higher potential for non-extractive multiple use than SNP, BNP, MENP, and RNP and Table 5.2 shows the total scores for each indicator group in the five national parks before and after re-scaling (in bold). The results show that KNP has the highest potential for recreation and ecotourism (total score = 380.4) and clearly confirm the hypothesis stated above.

Figure 5.1 Map showing the locations of Uganda's National Parks and the five (shaded black) used in this study

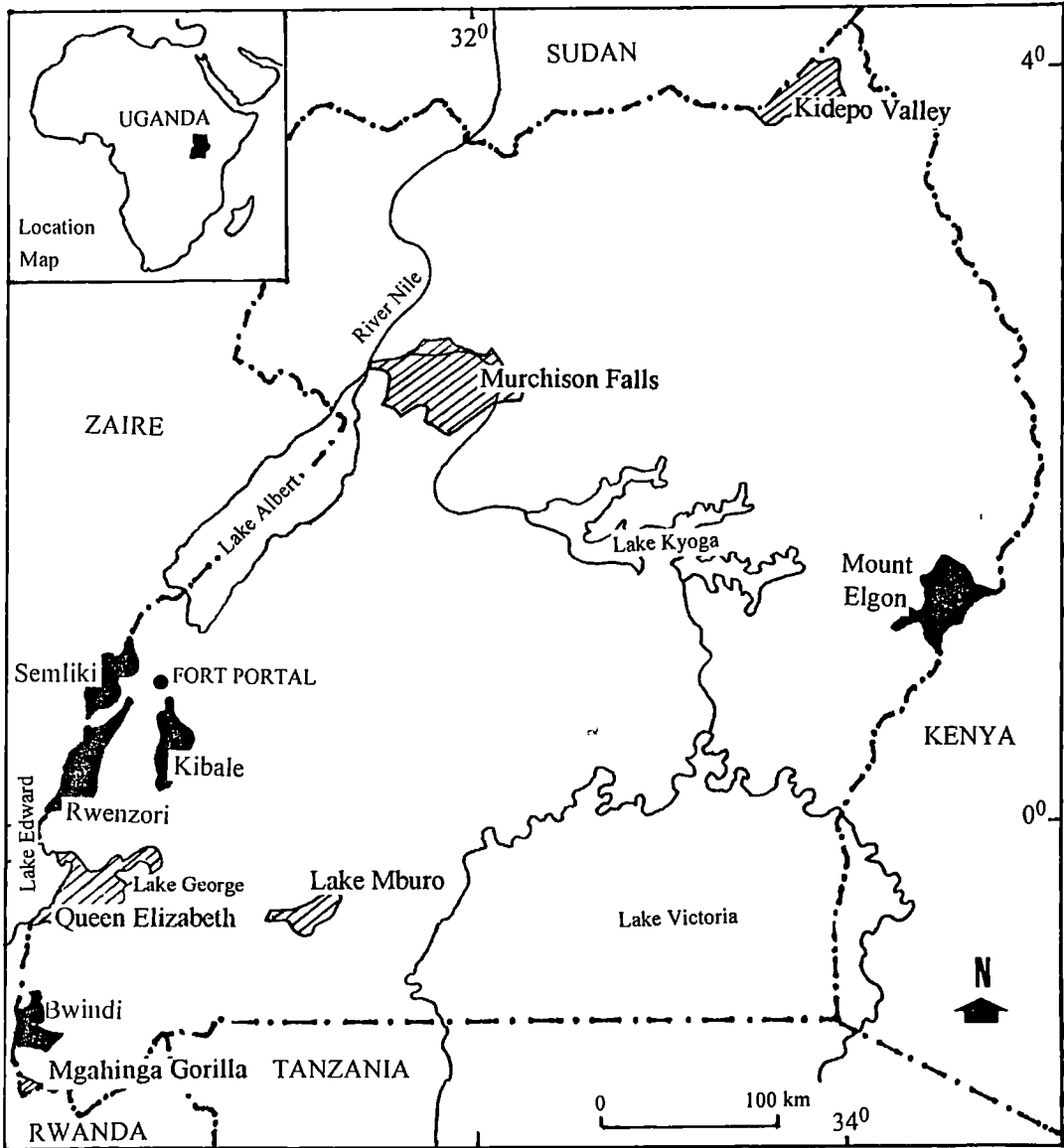


Table 5.1 The potential of KNP, SNP, BNP, MENP, and RNP for non-extractive multiple use.

Non-extractive multiple use	KNP	SNP	BNP	MENP	RNP
General issues					
Vehicular access to within 1 km of undisturbed forest	1	1	0	1	0
High human population (> 200/ km ²) in areas surrounding the park	0	1	0	1	1
Recreation and Ecotourism					
Visitor facilities (campsites, trails etc) in areas surrounding the park	1	1	1	1	1
Special attractions (gorillas, chimpanzees etc)					
Location within tourist circuit	1	0	0	1	1
Within 1 hour of major town with hotel facilities	1	0	0	1	1
Research history/ potential					
More than ten person years of ecological research completed	1	0	0	0	0
Ecological research underway and expected to continue	1	0	1	0	0
Education value					
Educational institution long established	1	0	0	0	0
Local environmental education programme underway	1	0	1	0	0
Total score for multiple use potential	9	4	4	5	5
Scaled scores	10.0	4.4	4.4	5.5	5.5

Table 5.2 Scores of importance showing the potential of KNP, SNP, BNP, MENP, and RNP derived from Howard's (1991) data using Smith and Theberge's (1987) method. N = total number of individuals and n = number of species in each indicator group.

Indicator group	KNP	SNP	BNP	MENP	RNP
Primate	32	32	24	8	16
N=84 n=12	100.0	100.0	75.0	25.0	50.0
Birds	410	219	214	140	77
N=817 n=329	100.0	53.4	52.2	34.1	18.8
Trees	410	334	322	206	146
N=1418 n=447	100.0	81.5	78.5	50.2	35.6
Butterflies/ Charaxes	45	51	56	36	16
N=204 n=57	80.4	91.5	100.0	64.3	28.6
Total Score	380.4	326.4	305.4	173.6	133.0

5.4.2 Appraisal of the Impacts of Recreation Impacts on the Camping Sites

Several researchers (for example Cole, 1995b) have reported that campsite deterioration in protected areas becomes a serious problem when recreation is introduced. Introduction of recreation means that managers of protected areas have to develop strategies for overcoming the problems that would result from recreation. At KNP, environmental problems are already being experienced and the managers are confronted with the challenge of controlling visitor numbers and minimising the impact so that the aim of conserving the Park is not compromised. The challenge can be met in several ways, for example, by equipping the park managers with the knowledge that will enable them to assess the magnitude of the current impact. In this way, they will be able to monitor the conditions of the camping sites and apply appropriate management measures. The planning of appropriate management interventions require sufficient information which this study strives to provide. In order to do so, an attempt was made to assess the impact of recreational activities on the camping sites at KNP and the results

are presented below.

Hypothesis: Recreational activities have degraded camping sites at KNP

5.4.2.1 Methodology

(a) The MPRS Procedure

Cole's (1983) MPRS method already described in Chapter 4, was used to assess the impact of recreational activities on the camping sites. Nine physical parameters were examined on nine camping sites, in the wet season (in October 1994) and in the dry season (in February 1995). The impact index for each parameter was derived by multiplying the rating determined in the field, by the weight determined by Cole. To obtain the overall impact index (I) for a camping site the impact indices for the parameters were summed up. The vegetation loss and mineral soil increase were expressed in percentage based on five coverage classes (%): 0-5, 6-25, 26-50, 51-75, 76-100. The coverage classes were used to estimate, by eye, the proportion (%) of the camping site (S_0) covered with ground vegetation (i.e. all plants excluding trees and shrubs which are 1 m or more in height) and the percentage with exposed mineral soil. This was done for the camping sites and the nearby undisturbed site (S_1). Table 5.3 gives a description of the criteria used for assigning ratings to vegetation loss and to mineral soil increase and Table 5.4 shows the criteria used for assessing tree damage, root exposure, development, cleanliness, social trails, camp and barren core areas.

Table 5.3 The criteria, rating and weight used in addition to coverage classes for evaluating vegetation loss and mineral soil increase on the camping sites at KNP

Criteria/ Parameter	Rating	Weight
Vegetation loss		2
Both S ₀ and S ₁ have the same vegetation coverage	1	
Vegetation coverage on S ₀ is one class lower than on S ₁	2	
The difference in vegetation coverage on S ₀ and S ₁ are two or more classes	3	
Mineral soil increase		3
Both S ₀ and S ₁ have the same degree of mineral soil exposure	1	
Mineral soil exposure on S ₀ is one class lower than on S ₁	2	
The difference in mineral soil exposure on S ₀ and on S ₁ is two or more classes	3	

Damaged trees were defined by Cole as those having human caused marks or scars. Development was indicated by the presence of fire sites (i.e. a fire ring or fire scar). A fire site was considered a fire ring when there was a ring of stones, and a fire scar when the stones were scattered. Social trails were informal trails with partially worn vegetation leading from the camping site to places such as a water tap, toilet and so on whilst discernible trails were those mostly vegetated but visible. The impact indices were classified on an ordinal scale as follows: low (20-29), moderate (30-40), and high (41-50). Two maps were then drawn to show the extent of impact during the wet and dry seasons.

Table 5.4 The criteria, rating and weight used for evaluating recreational impact on camping sites at KNP

Criteria/ Parameter	Rating	Weight
Tree damage		2
No tree damaged	1	
1-8 trees damaged or 1-3 trees felled	2	
More than 8 trees damaged or more than 3 trees felled	3	
Root exposure		3
No tree with exposed roots	1	
1-6 trees with exposed roots	2	
More than 6 trees with exposed roots	3	
Development		2
No fire site	1	
One fire ring, log seats or both	2	
Two or more fire rings	3	
Cleanliness		1
One fire scar, no scattered charcoal, no human waste	1	
Two or more fire scars, some evidence of human waste	2	
Scattered litter and greater occurrence of human waste	3	
Social trails		2
One discernible trail	1	
Two or more discernible trails or one well worn trail	2	
More than three discernible or well worn trails	3	
Camp area		3
Less than 50 m ² disturbed	1	
About 50-200 m ² disturbed	2	
More than 200 m ² disturbed	3	
Barren core area		2
Bare area less than 5 m ²	1	
Bare area 5-50 m ²	2	
Bare area more than 50 m ²	3	

(b) Statistical Analysis

Pearson's correlation coefficient (r) was calculated using Haber and Runyon's (1973) mean deviation method to answer the following question: is there any relationship between the impacts in the wet and dry seasons? It was assumed that site degradation was a continuous process with impact, for example in the wet season forming part of the impact in the dry season. Pearson's correlation coefficient was squared to obtain the Proportional Reduction Error coefficient (r^2) for a better measure of association (see de Vaus, 1985).

5.4.2.2 Results

Table 5.5 shows the cumulative impact indices for the nine camping sites at KNP as well as the mean impact indices for each of the nine parameters in the wet and dry seasons. The average cumulative impact index in the wet season ($I = 26.6$) was less than in the dry season ($I = 33.1$) implying that the camping sites were more degraded in the dry season. In the wet season, the impact was low (L) on six sites, moderate (M) on two and high (H) on one (Figure 5.2a). In the dry season the impact was moderate (M) on six sites and high (H) on three (Figure 5.2b). There was a significant correlation between the impacts in the wet and dry seasons ($r^2 = 0.6$) suggesting that the degradation in one season is built upon in the next season.

All the sites appeared to experience more or less similar rates of vegetation loss in the dry season (mean impact index of 4.2) and in the wet season (mean impact index of 4.0). The degree of soil exposure was higher in the dry season with a mean impact index of 5.0. The number of trees damaged in the dry season was higher (1-8 trees) whereas the number of trees with exposed roots was constant. The number of fire scars was the same in both seasons and all the sites were generally kept clean throughout the two seasons. Few social trails were created (an average of one per season) which shows

that the visitors kept to the footpaths most of the time. Overall, the camping sites experienced low disturbance in the wet season than in the dry season with less than 5 m² of barren core area created.

Table 5.5 Impact indices for the nine camping sites at KNP in the wet season and dry season (in parentheses)

Parameter	S I T E S									Σ	Mean
	1	2	3	4	5	6	7	8	9		
Vegetation loss	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (6)	4 (4)	36 (38)	4.0 (4.2)
Mineral soil increase	3 (6)	3 (3)	3 (9)	3 (3)	3 (6)	3 (3)	3 (6)	3 (6)	3 (3)	27 (45)	3.0 (5.0)
Tree damage	2 (2)	2 (4)	2 (4)	2 (4)	2 (4)	2 (4)	4 (4)	4 (4)	4 (2)	24 (32)	2.7 (3.6)
Root exposure	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	27 (27)	3.0 (3.0)
Development	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	6 (4)	4 (6)	38 (38)	4.2 (4.2)
Cleanliness	1 (1)	1 (2)	1 (2)	1 (1)	1 (1)	1 (2)	1 (2)	2 (1)	1 (2)	10 (14)	1.1 (1.6)
Social trails	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	2 (4)	4 (6)	2 (2)	20 (24)	2.2 (2.7)
Camp area	3 (6)	3 (3)	3 (6)	3 (6)	3 (6)	3 (6)	6 (9)	9 (9)	6 (9)	39 (60)	4.3 (6.7)
Barren core area	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	2 (2)	2 (4)	2 (2)	18 (20)	2.0 (2.2)
Cumulative impact index	24 (30)	24 (27)	24 (36)	24 (29)	24 (32)	24 (30)	29 (38)	37 (44)	29 (33)	239 (298)	26.6 (33.1)
Impact class	L (M)	L (M)	L (H)	L (M)	L (M)	L (M)	M (H)	H (H)	M (M)		L (M)

Figure 5.2(a) Campsite conditions in the wet season in Kibale National Park

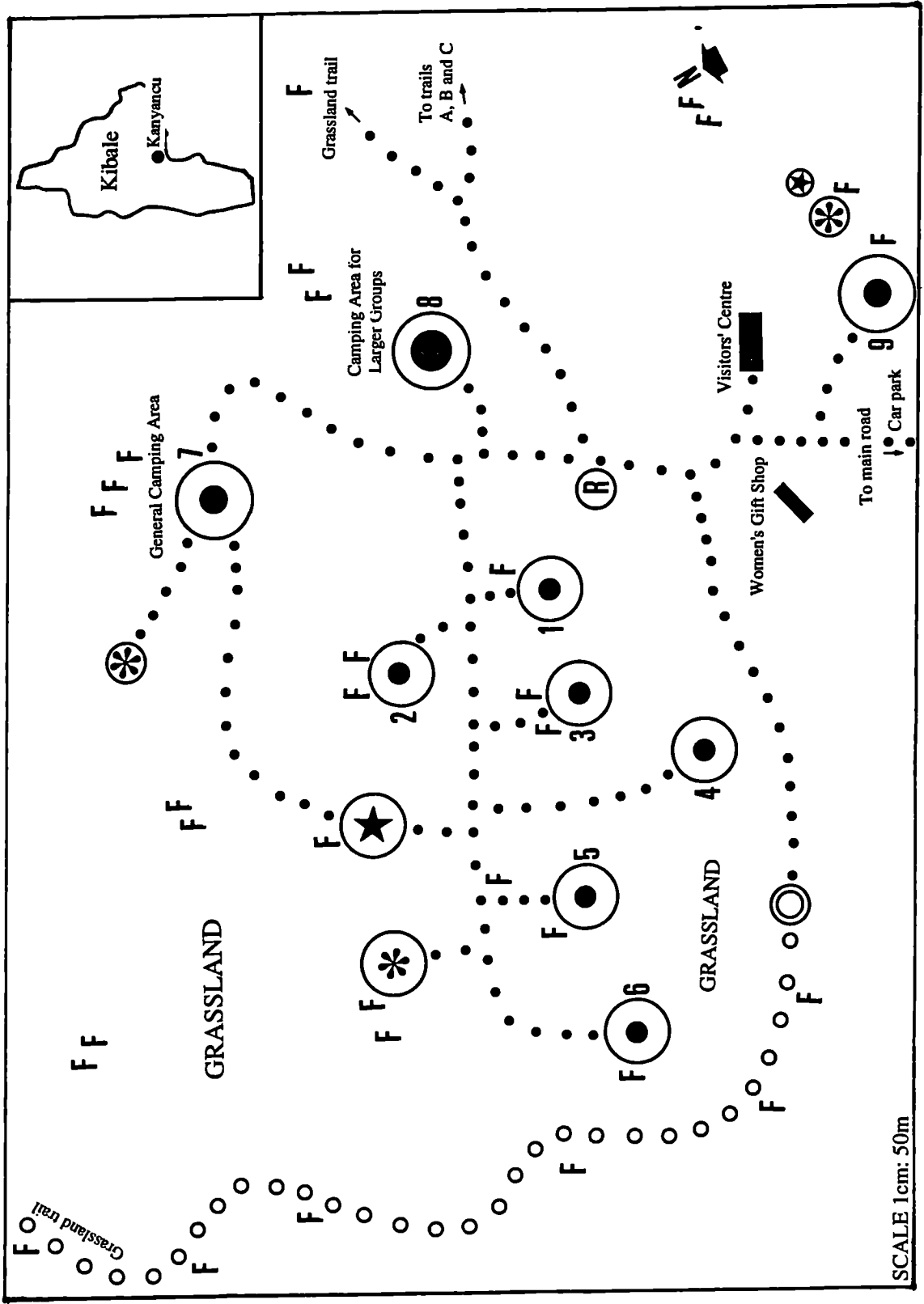
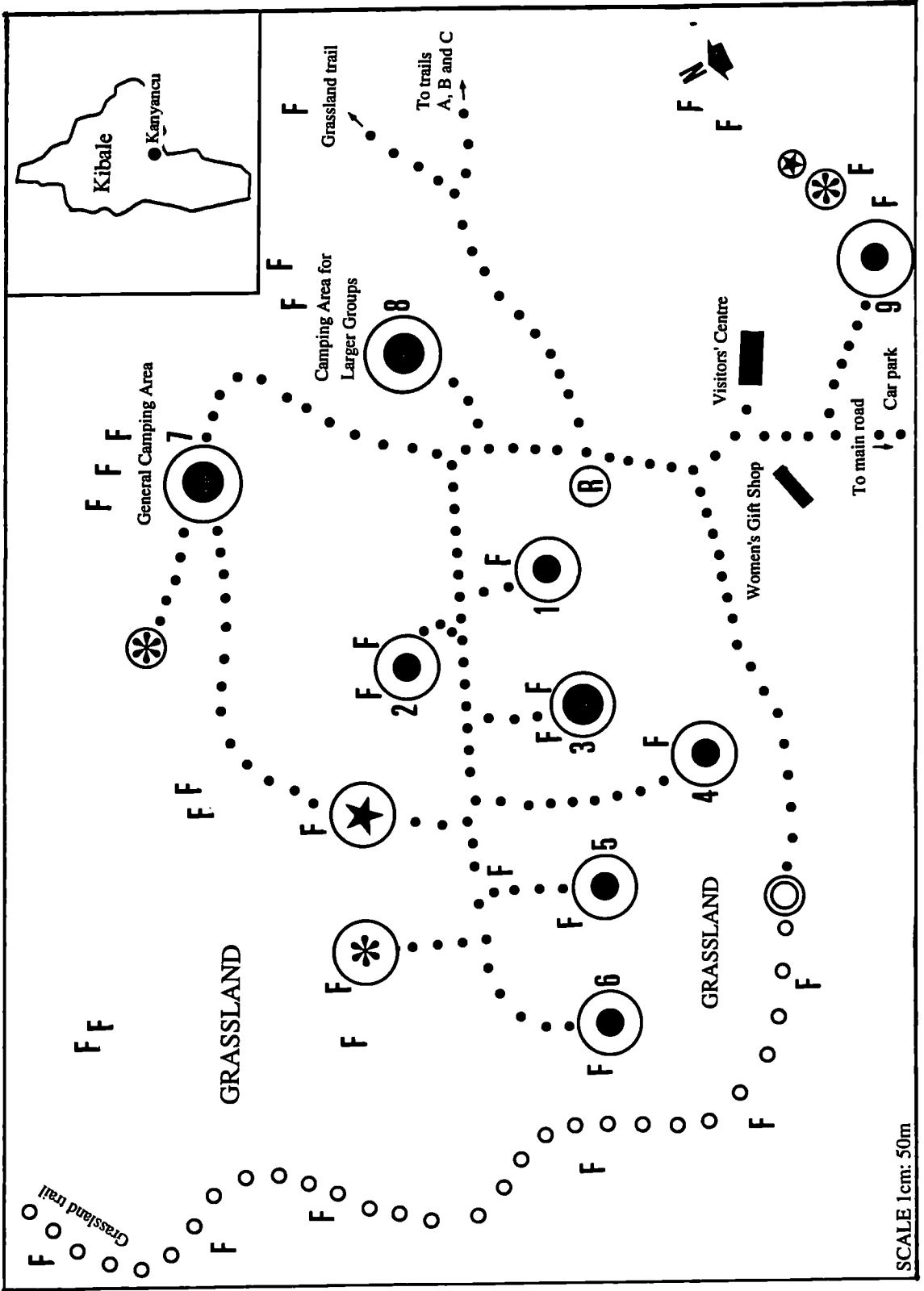


Figure 5.2(b) Campsite conditions in the dry season in Kibale National Park



KEY



High impact



Moderate impact



Low impact



Showers and wash facilities



Toilet



Grass thatched watch tower



Grass thatched rest house



Forest



Camping sites



Foot path

5.4.3 Appraisal of the Trail Conditions

Nature walks represent one of the major activities at KNP and would remain a popular activity if the trails are kept in good condition. Several studies by Bates (1935), Bayfield (1973), O'Hare (1978), and Goldsmith (1983) have shown that proper management of trails and footpaths contributes greatly to visitor satisfaction in the countryside. Proper management of trails is therefore essential since well maintained trails can withstand visitor pressure, which in many ways help to preserve the quality of the environment. With nature walks likely to remain some of the leading recreational activities at KNP (this is discussed further in Chapter 6), it is imperative that the managers gain sufficient knowledge of the trail conditions. Equipped with such knowledge, the managers would be in a better position to determine how much and what kind of damage is occurring. This study has been one of the first attempts to provide information toward such knowledge.

Hypothesis: Degradation of nature trails in KNP does not depend on the slope and type of vegetation through which they pass.

It is assumed in this study that the occurrence of erosion and the presence of exposed tree roots provide sufficient evidence of trail degradation.

5.4.3.1 Methodology

(a) Sampling Procedure

The Census technique (Bratton *et. al.*, 1979) described in Chapter 4 was adopted to assess the impact of visitor pressure on both the Buraiga (grid) and the Kanyantale (loop) trail systems at KNP. The Buraiga grid covers approximately 20 km² and the Kanyantale loop stretches over a total distance of about nine kilometres. A total of 90

sampling points were selected by pacing along each trail. A sampling point was located after every 200 paces and erosion, tree root exposure, vegetation type and slope were recorded. Topography was dropped from the initial list of parameters to be considered due to lack of a proper topographic map to determine the altitudes. Erosion and root exposure were recorded as negligible, low, moderate, high or severe where the criteria in Table 5.6 were met. Vegetation was assessed by the eye and recorded as either grassland, shrub or forest depending on the dominant plant type present. Slope was determined using a clinometer and recorded as gentle, moderate or steep again based on the criteria given in Table 5.6.

(b) Statistical Analysis

The percentage of each trail system being eroded and having exposed tree roots was calculated. The G- test (Sokal and Rohlf, 1988) was used to estimate the degree of association between erosion, root exposure, vegetation, and slope.

Table 5.6 Description of the parameters considered in the appraisal of the trail conditions at KNP.

Parameter	Description
Erosion	Mean incision (cm) x mean width (cm)
Negligible	<2 x < 25
Low	2-6 x 25-50
Moderate	6-8 x 50-100
High	> 8 x > 100
Root exposure	Number of trees
Negligible	0
Low	1-3
High	4-8
Severe	>8
Vegetation	Proportion (%) of dominant plant type
Grassland	>50 grass
Shrub	>50 shrubs
Forest	>50 trees
Slope	Degrees ($^{\circ}$)
Gentle	0-20
Moderate	21-30
Steep	>30

5.4.3.2 Results

Slope greater than 30⁰ was not observed on the trails, consequently the steep slope category described in Table 5.6 was not considered in the statistical analysis. Similarly, grasslands and shrubs with observed frequencies less than five were combined for a more rational statistical analysis. About 10 per cent of the Buraiga and Kanyantale trail systems was being eroded (Table 5.7). About 30 per cent of the Buraiga trails was under moderate erosion. This observation is rather surprising because the Buraiga grid was established several months after the Kanyantale loop and covers a much greater area (about 20 km²). As one would expect, the grid should be more eroded than the loop.

The average slope was 9° on the Buraiga grid and 12.9° on the Kanyantale loop. This perhaps explains why erosion was fairly low on both trail systems, although the results of the G-test (Table 5.8) does not confirm this.

Table 5.7 The proportion (%) of the Buraiga and the Kanyantale trails being eroded and having exposed tree roots. The descriptions of erosion and root exposure categories are the same as those in Table 5.6.

Parameter	Buraiga grid	Kanyantale loop
Erosion category		
Negligible	15.6	33.3
Low	42.2	28.9
Moderate	33.3	26.7
High	8.9	11.1
Root exposure		
Negligible	6.7	15.6
Low	62.2	46.6
High	22.2	35.6
Severe	8.9	2.2
Average slope (°)	9.1	12.9

The percentage of trees with exposed roots was higher on the Kanyantale trails (35.6%) than on the Buraiga trails (22.2%). Root exposure was not severe on both trails but the association between root exposure and erosion was highly significant ($G_{adj} = 34.72, P \leq 0.01$). Similarly, the association between trail erosion and root exposure, slope and vegetation was highly significant ($G_{adj} = 55.18, P \leq 0.01$) (Table 5.8).

Table 5.8 Results of the G-test of association between erosion, vegetation, slope and root exposure on the Buraiga and the Kanyantale trails at KNP

Parameter	G_{adj}	χ^2	P
Erosion x Vegetation	1.62	3.84	ns
Erosion x Slope	3.25	3.84	ns
Erosion x Root exposure	34.72	5.99	**
Vegetation x Slope	0.00025	3.84	ns
Vegetation x Root exposure	0.09	3.84	ns
Slope x Root exposure	2.58	3.84	ns
Erosion x Root exposure x Slope x Vegetation	55.18	21.67	**

ns: no significant association between parameters at $P \leq 0.05$

** Significant association between the parameters at $P \leq 0.01$

5.4.4 Impact of Campsite Development and Camping on Woody Species Diversity and Composition

Since the introduction of ecotourism at KNP, one of the management objectives has been to minimise the amount of all forms of human-related damage and to maintain the ecological status of the Park. To achieve this objective, information on the ecology of the Park is needed and aspects such as the diversity and composition of woody species needs to be known. The rationale for assessing woody species diversity and composition in protected recreation areas are two fold: first, it strives to simplify the implicit recognition of the dynamic nature of the areas, a phenomenon that has not been fully applied in the management of KNP. Second, woody species diversity in protected areas is known to be ecosystem-effective because plant communities provide critical habitats for other living organisms as well (Goudie, 1990).

This study attempts to provide information that will help in the monitoring and evaluating the ecological changes that recreation activities are likely bring to KNP. For

example, the recruitment of new colonising woody species is a possible situation that may develop and will require routine monitoring to detect the presence of such species. Introduction of alien species can make the ecosystem structure and function unstable. (Lajeunesse *et. al.*, 1995). Therefore, with this kind of information available, KNP can be managed for both ecotourism and conservation without compromising the objectives of either.

Hypothesis: Campsite development and camping has reduced the diversity and composition of woody species at KNP.

5.4.4.1 Methodology

(a) Selection of Method and Sample Size

Magurran (1988) has written a comprehensive account of the various methods available for assessing species diversity and the difficulties inherent in the selection of appropriate sample sizes. Of the several species diversity indices and models she documented, none is recommended as standard and the choice has been left open to researchers. Many authors have suggested that the method and sample size selected should be determined by the type of problem at hand so long as the results obtained give a fair estimate of the problem and fulfils the objectives. Dowdeswell (1984) supports this view, adding that the method chosen needs to be ecologically sound and simple so that the results obtained are easy to analyse and interpret. Based on these guidelines, Dowdeswell's diversity function was selected for this study. It is represented as :

$$D = \frac{N(N-1)}{n(n-1)}$$

Where: D = diversity index

N = the total number of individual woody plants

n = number of individuals per woody plant species

The function measures the relationship between the number of plants and the number of individual woody species so that as D increases the diversity also increases. Unlike most other diversity indices, the accuracy of Dowdeswell's diversity index does not rely so much on the sample sizes. As a result, the function is appropriate for finite plant communities where species diversities can be assessed and compared. The composition of woody species on the camping sites and the nearby forest were compared using the Morisita-Horn similarity coefficient (see Magurran, 1988) represented as follows:

$$C_{MH} = \frac{2 \sum (an_i bn_i)}{(da + db) an.bN}$$

$$da = \frac{\sum an_i^2}{aN^2}$$

$$db = \frac{\sum bn_i^2}{bN^2}$$

where:

C_{MH} = Morisita-Horn similarity coefficient

aN = number of individuals in site A

bN = number of individuals in site B

an_i = number of individuals in the i th species in site A

bn_i = number of individuals in the i th species in site B

The coefficient measures β diversity of pairs of sites, that is, how different or similar two sites are in terms of species composition. The coefficient is equal to 1 if the species on both sites are completely identical, and 0 if the sites are dissimilar and have no species in common. The major advantage of the Morisita-Horn coefficient is that the

results are not so much affected by sample size, although it is highly sensitive to species abundance.

(b) Sampling Procedure

Eighteen square sample plots, each 20 m long and 20 m wide were established at the nine camping sites where the forest vegetation had been partially cleared, and another 18 in the adjacent undisturbed forest. A distance tape was used to determine the length and width of each plot. Four poles, each one metre high, were fixed in the ground to mark the corner of the plots. Each pole was tagged with a red plastic label for easy recognition. The plot size was made 20 m by 20 m because most of the camping sites were very close together with only a narrow band of forest in between, and a plot length or width greater than 20 m was not possible to lay out without crossing into the neighbouring camping site. All woody plants which were 1 m high or greater were counted by species and recorded.

(c) Calculation of Species Diversity Index and Similarity Coefficient

The diversity and composition of woody plants at the camping sites and in the nearby undisturbed forest were calculated using Dowdeswell's diversity function and the Morisita-Horn coefficient of similarity as already stated above.

5.4.4.2 Results

A total of 233 woody plants were enumerated. Of these, 106 were shrubs and 127 were trees. Altogether there were nine species of shrubs and 29 species of trees. The number of woody plants (86) and species (26) on the camping sites were less than the number of woody plants (147) and species (32) in the adjacent forest (Table 5.9). The reason is that much of the forest vegetation was removed to create the present camping sites. Consequently, the woody species diversity is higher ($D=14.4$) in the

adjacent forest than at the camping sites ($D=13.8$). There was marked difference in species composition ($C_{MH}=0.45$). This suggests that some species were lost during site clearing and have not been replaced, for example, by natural regeneration. Out of a total of 38 species enumerated, 17 were common to both the camping sites and the nearby forest.

Table 5.9 The species, number and diversity of woody plants on the camping sites and in the nearby undisturbed forest in KNP.

Woody species	Number on camping site	Number in nearby undisturbed forest
<i>Acanthus tuberosum</i> *	0	54
<i>Acacia siberiana</i>	0	3
<i>Albizia coriaria</i>	1	0
<i>A. Grandibracteata</i>	1	6
<i>A. Gummifera</i>	1	6
<i>A. zygia</i>	0	2
<i>Balsamocitrus dawei</i>	2	1
<i>Bersama abyssinica</i> *	1	1
<i>Blighia unijugata</i>	1	0
<i>Bridelia micrantha</i>	2	7
<i>Celtis durandii</i>	1	12
<i>Chaetacme aristata</i> *	0	23
<i>Croton megalocarpus</i>	1	9
<i>C. Sylvatica</i>	0	2
<i>Chrysophyllum albidum</i>	2	0
<i>Diospyros abyssinica</i>	0	16
<i>Dombeya goetzeni</i> *	0	15
<i>D. mukole</i> *	6	2
<i>Erythrina abyssinica</i>	3	10
<i>Ficus capensis</i>	1	0
<i>F. dawei</i>	0	27
<i>F. zanzibaria</i>	0	12
<i>Funtumia elastica</i>	2	5

Table 5.9 continued

Woody species	Number on camping site	Number in nearby undisturbed forest
<i>Harrisonia abyssinica</i>	2	0
<i>Kigelia africana</i>	0	11
<i>Monodora myristica</i>	2	0
<i>Oslandia opposita</i> *	2	0
<i>Phoenix reclinata</i>	0	9
<i>Phyllanthus discoides</i>	0	6
<i>Premuna angolensis</i>	0	8
<i>Sapium ellipticum</i>	1	10
<i>Spathodea campanulata</i>	2	5
<i>Syneria dicrotatus</i> *	5	42
<i>Tabernaemontana holstii</i>	2	3
<i>Trichilia dregaena</i>	1	1
<i>Turraea floribunda</i> *	0	6
<i>Vernonia conferta</i> *	13	3
<i>Warbugia ugandensis</i>	2	5
Total number of individuals (N)	57	324
Number of species (n)	24	31
Dowdeswell's diversity index (D)	13.8	14.4
Morisita-Horn similarity coefficient (C_{MH})	0.45	-

* = shrub species

5.5 Conclusions

This study has confirmed that Kibale National Park has the potential for recreation and ecotourism. It is clear from some literature that the evaluation of natural areas for purposes of identifying the conservation values and other human uses has been a widespread practice. This study has demonstrated that although no standard approach exists for evaluating the recreation potential of natural areas, methods such as the multi-criteria models can be applied reasonably well. It is therefore quite conceivable that

similar studies could be done for other natural areas of Uganda prior to the introduction of ecotourism. Current debates on sustainability of ecotourism focus on the need for maintaining a balance between ecotourism and resource conservation. Fears have already been expressed about ecotourism as a self-destructive process (Cater, 1991) and many researchers have cautioned on the need to ensure that ecotourism is developed in tandem with goals of environmental preservation. All these debates and discussions lead to the conclusion that ecotourism must be environmentally sustainable. Sustainable ecotourism can best be achieved when there is a clear understanding of the value of the natural environment which attracts visitors and the significance of protecting it.

The environmental approach presented in this chapter is based on the premise that visitor impact in Kibale National Park will continue to increase and will need to be monitored regularly. The results are, therefore, valuable and are expected to contribute towards improving the understanding of the ecology and environmental problems usually confronted when managing ecotourism in protected areas. What remains to be done is to provide a framework for effective use to which the information will be put, especially in the development of management guidelines for the Park.

CHAPTER 6

CURRENT RECREATIONAL USE: THE VISITOR SURVEY

6.1 Introduction

Background to the Survey

One of the keys to effective management of any recreation site is accurate information about who uses the site, and what attracted them to it. This chapter presents the results of the visitor survey carried out at Kibale National Park (KNP). It was the first major study of visitors since ecotourism was introduced in 1992. As such, the results may have several shortcomings. But sound management of ecotourism in a protected area such as Kibale requires a well compiled and comprehensive set of information about the characteristics of visitors and the nature of visits. The need to provide such information prompted this study.

The findings presented here should be of interest, not only to the managers of KNP, but also the other national parks where similar surveys have not yet been carried out. In view of this, it was felt necessary to describe the strengths and weaknesses of the method used in the study. The purpose is to illustrate two important principles in conducting a visitor survey. The first is the need to establish firm ideas on how the survey can be conducted and the ways in which the results would be used. At the time of planning the study, a series of questions was asked and the survey endeavoured to answer them. Some of the questions were related to the lessons that would be learnt from the survey. The second is the need to meet the management and promotional objectives of recreation areas. Without these, survey results may not be usable. So, as well as gathering data for better management of KNP, the study also tested a method

from which other national parks may learn.

One of the strategies for promoting ecotourism at KNP is to raise the visitors' awareness of conservation and facilities. In order to achieve the strategy, sufficient management information on visitors is required. The information can be obtained by seeking answers to certain questions. Who are the visitors? Where do they come from? How do they learn about KNP and decide to come? Is the idea of protected areas/parks important in their decision to visit? What do they think about the recreation site and the facilities? What improvements would they like to see at KNP?

These questions can best be answered by the visitors themselves. Thus, self completion questionnaires were designed to facilitate gathering of information. Since the success of questionnaire surveys depends upon the quality of information collected, the design of the survey took full account of the major aspects of survey documented by Locke (1985). First, the representative samples were determined. Here, time of the year when the research would be carried out was carefully chosen. In addition, the sampling method was selected so that bias would be minimised. Second, the questionnaire was designed bearing in mind the need to minimise the scope for misunderstanding the purpose of the survey, and to keep the questionnaire to a length that would not inconvenience the respondents. Third, there was the need for practical realism in using the questionnaire so that visitors do not reject them as too complicated or jump questions because they were not understood.

Chapter Outline

This chapter comprises several sections. In section 6.2 a description of the questionnaire design and survey organisation is given. Field reconnaissance, pilot survey and questionnaire administration are also described. In section 6.3 the questionnaire

response is reported, and in section 6.4 the processes of data preparation and analysis are outlined. The rest of the survey results are summarised in section 6.5. In section 6.6 the major conclusions of the chapter are presented.

6.2 Questionnaire Design and Survey Organisation

Introduction

The use of questionnaire surveys in recreation research has been widespread. However, on-site interviews have been considerably criticised, for example, by Davidson (1970), Burton (1971), and Locke (1985). One of the major criticisms of questionnaire surveys and their applicability to recreation research is the lack of adequate planning. Ideally, all aspects of the survey, from the construction of the questionnaire to the eventual fieldwork, should be carefully planned and implemented. The survey should be closely co-ordinated and supervised. According to Locke (1985), even the smallest errors repeated many times over can easily invalidate the whole exercise. Thus, survey research needs to be preceded with much thought and meticulous planning.

In the selection of the self-completion questionnaire used in this study, most of the criticisms of past on-site surveys were taken into account. The benefits and pitfalls of interview methods (see Chapter 4) were also considered. The initial conceptions of the study were carried out during the first year of the author's PhD programme in the School of Agricultural and Forest Sciences, University of Wales, Bangor. In the same year a draft questionnaire was designed and tested in the field. The principal aim of the survey was to collect data on the characteristics of visitors and the current level of visitations to KNP.

Questionnaire Design

As noted earlier in Chapter 4, questionnaires are used to elicit information that cannot be readily determined from observations alone. The central issue in questionnaire construction is often the development of meaningful survey questions. Egan *et. al.* (1995) have analysed the difficulty of questionnaire design and noted how investigators usually assume that words familiar to them are also familiar to the targeted audience, and that the same words convey similar meanings. For this study, the self-completion questionnaire was deemed the most appropriate and was selected for two major reasons. First, it has been widely used and therefore was considered convenient for a survey where visit level is low. Second, in using the self-completion questionnaire, visitors are given time to answer the questions at their leisure. Third, unlike other parks, KNP has only one entrance, thus erasing fears of low response that usually occur when visitors are directly interviewed as they leave the park through several exits. Under these conditions, it was possible to proceed with the survey.

The questionnaire was designed to meet the aims of the survey and efforts were made to refer to as many published materials as possible. In particular the following references were consulted: Trakolis (1979), Bardon (1978), Bardon and Harding (1981), Tourism and Recreation Research Unit (1983), Locke (1985), Wan Sabri (1987), and Oppenheim (1992). Three publications were especially useful for the design of the questionnaire and the carrying out of the field survey namely, Tourism and Recreation Research Unit (1983), Locke (1985) and Scottish Natural Heritage (1993).

A total of 34 questions was constructed covering a wide variety of topics. Out of these, nine were open-ended. The respondents were asked to answer all the questions except questions 1.5, 1.7, and 1.8 which were meant for repeat visitors only (Appendix I). The questionnaire was divided into three parts covering different subjects. For

instance, in part one, there were 12 questions which sought information on the visitors' travel and demographic characteristics. The first sequence asked visitors how they arrived at KNP, the purpose of their visit, whether they were visiting for the first or second time, and how they first came to hear about KNP as a place to visit. They were then asked whether their visit was influenced by any publicity material about KNP, whether it was planned beforehand, and the main reason for choosing to visit KNP. In an effort to obtain their perception of forest/park conservation, the sequence ended with questions on the idea of protected areas/parks and whether it was important in their decision to visit, and the forms of wildlife that interested them most.

Part two had 14 questions on activities participation, preferences and visitors' attitudes towards management of the site and facilities. The questions focused on the activities visitors participated in during their stay at the Park, the activities enjoyed most and those activities they would have liked to participate in if it were possible. There were additional questions on visitor expectations; what they thought KNP would be like before coming, and whether they would come again on a future visit. The last questions in this sequence focused on the duration of visit, type of accommodation used during the visit, and the daily expenditure on food and drinks. The final question sought suggestions on improvements or developments the visitors would like to see at the Park.

Part three had eight questions which dealt mainly with the visitors' socio-economic characteristics. The visitors were asked to specify their countries of origin and nationality, age and sex as well as the number, age and sex of other persons in their party. The questionnaire was concluded with questions on marital status, level of education, employment, occupation and monthly income. As shown in appendix I, the questionnaire allowed for the correct responses to be circled from a group of alternative answers so that they could be coded for computer analysis.

The draft questionnaire was produced and then revised by the supervisor. Changes were made to the draft based upon the comments and criticisms received. For example, it was realised that people are often very sensitive to questions on their socio-economic status. Consequently, it was decided that the questions should be put at the end of the questionnaire. It was also anticipated that the visitors would have different educational backgrounds and knowledge of English. To this end, attempts were made to keep the wording of the questions as simple as possible.

Selection of Sample Size

Sample size selection is one of the most important factors in recreation site surveys and two major problems are often encountered. The first is the determination of an appropriate sample, and the second is securing a sample size which is representative of the larger population on which the study is based. In this case, other fieldwork activities played a significant role in the selection of the sample size. For example, it was not possible for the author to stay at the recreation site everyday and therefore a sample size of 200 was chosen because the interviews could be done within the allotted time. Nevertheless, the guidelines and principles of sampling described by the Tourism and Recreation Research Unit (1983) were carefully followed. A further constraint encountered was lack of information from previous surveys which could have provided guidance on the selection of sample size. A sample size of 200 was chosen and it was considered large enough to provide sufficient data and to allow for reasonable statistical analysis to be carried out.

Survey Organisation

It is a policy requirement in Uganda that a formal application must be made through the National Council for Science and Technology for permission to carry out

any research in the country. Upon return to Uganda, the author applied for permission to conduct research and it was granted. A second permission was obtained from the Chief Park Warden of Kibale National Park especially to carry out the visitor survey. First, discussions were held with the entire management team of the Park to identify areas where further assistance would be needed. Later, it was decided that the receptionist at the visitors' centre should be recruited as the field assistant because of his experience in handling visitors.

Field Reconnaissance and Pilot Survey

The aim of carrying out field reconnaissance was twofold. First, to observe on the site the level of visits so as to determine how the survey would be conducted. Secondly, to discuss with the Park management, the seasonal pattern of visits in order to identify the most appropriate period to conduct the survey, taking into account the time constraint already mentioned above. This proved to be an important process, as it resulted in several modifications to the original work plan.

In order to reveal some of the problems overlooked during the planning stage as well as those mistakes concealed in the questionnaire, a pilot survey was conducted. As suggested by Egan *et. al.* (1995), pre-testing of questionnaires is an important stage in survey work and helps to uncover unnecessary jargon and semantics. As such, the pilot survey was designed to show all or some of the following:

- whether individual questions were carefully framed and ordered, and if not what modifications were needed;
- whether on not the questionnaire was of a suitable length and layout;
- whether the sampling procedure was adequate, and if not what changes were needed;

- whether the visitors understood the terms "protected areas", and "forest diversity" used in questions 1.10 and 1.11. These terms were thought to be too scientific for the less educated visitor to understand.

During the reconnaissance survey, it was noticed that visitors arrived any time of the day. After discussions with the Park managers it was found that the visit level sometimes dropped to less than 10 persons per week in certain months. As a result it was decided that it would be better to carry out the survey between October 1994 and June 1995 which includes the peak season. Finally, the sampling procedure was selected and questionnaires were handed out as visitors returned from the trail walks in the morning and afternoon. In doing so the visitors were first given time to experience the forest and then complete the questionnaires at leisure. A simple random sampling procedure in which every second visitor was selected was used. The major problem encountered was with the transit visitors who, after the walks, had little time to complete the questionnaires. With prior considerations on how the survey would be conducted, the questionnaire was piloted.

As expected, very few problems were encountered with the questionnaire. Since the questions were straightforward, the format was found to be clear and the questions easily understood. On average each visitor spent about 20 minutes completing the questionnaire. However, the following changes had to be made after the pilot survey:

- (i) The status of Kibale had changed from Forest Park to National Park in November 1993 as the survey was being planned and the questionnaires designed. As a result the name "Kibale Forest Park" initially appearing on the questionnaires was changed to "Kibale National Park".
- (ii) Instructions were inserted after every question to guide the respondents on how to present their answers. The phrase "*Please circle only one that applies*" was

inserted after every question where several answers were given. For the open-ended questions, respondents were asked to write the answers in spaces left at the end of the question. Thus, the phrase "*Please write your answer (comments) in the space provided below*" was inserted after every open-ended question. The instructions were written in bold italics to differentiate the font from the one used for the questions.

- (iii) Questions 2.1 and 2.2 were piloted without limiting respondents' choice of activities participated in, and enjoyed most respectively. It was felt that for a better analysis, the respondents should indicate only five activities. In a similar fashion, the following statement was inserted after question 2.1 and then 2.2 "*Please circle FIVE (5) activities only*". In question 2.1 "fishing" was removed from the list of activities because it was discovered that fishing was not a recreational activity at KNP.
- (iv) Ugandan visitors were asked, in questions 2.13 and 3.8 dealing with visitors' expenditures and monthly incomes respectively, to indicate how much they spent in shillings.
- (v) There was confusion over the marital status of respondents who separated in their marriage. It was decided that the word "separated" should be replaced with "divorced" since separated people were still legally married.
- (vi) It was considered appropriate to win the confidence of the respondents while answering question 2.14 on attitudes towards management of the site and facilities and the questions on socio-economic profile. Visitors were assured that the information they provided was to be used for the purposes of the survey only. Thus, the following statement was put at the end of the questionnaire "*May we assure you that all the information you have given will be treated in the strictest confidence*". In respect of courtesy, the respondents were thanked for their co-operation in the exercise.

Questionnaire Administration

Following a successful pilot study, the visitors survey commenced in the second week of October 1994 and lasted till June 1995. The visitors were informed that the survey was being conducted on behalf of Makerere University and that their participation in the exercise would contribute enormously towards improvement of KNP management. Throughout the survey the field assistant handed out the questionnaires under the author's supervision. As it was, the visitors retired to seats on the veranda of the visitors' centre after the walks. This made it easy to give out the questionnaires and collect them after they were completed. Care was taken to ensure that those camping for several days at the site were not served twice with the questionnaire. In addition, the visitors who requested to carry the questionnaires with them to complete in their tents were allowed to do so, but asked to return them before the end of the day. The field assistant was instructed to follow up delayed or missing questionnaires. Since all the copies were serial numbered, it was easy to identify those missing.

Refusals were recorded and compensated for by selecting the next person in the group. Incomplete questionnaires were treated as "lost" interviews and therefore not included in the final analysis. The questionnaires were checked at the end of the day and the problems encountered by the field assistant were discussed. Additional ideas expressed by the visitors outside the questionnaire were noted. A total of 213 questionnaires was given out in the nine months. Of these, 200 were complete and usable, five had some sheets missing, and eight were incomplete.

6.3 The Questionnaire Response

A common criterion by which surveys are judged is the response rate they achieve. In visitor surveys, one useful measure of success (or otherwise) is the visitor

response rates. A combination of long survey period and co-operation of visitors contributed to the success of the survey. There were very few refusals. Those encountered were mainly from transit visitors rushing to the next destination in their tour itinerary. Under such circumstances refusals were compensated. Many visitors thought the survey was a great idea and showed much interest in the exercise. They demonstrated this by spending extra time completing the questionnaire and discussing the benefits of the survey. Some of the points raised during the discussions were noted and have been used in the general discussion in Chapter 9. The length of answers given to the open-ended questions is further evidence of the keen interest respondents had in the survey. It also showed how concerned some visitors were about KNP as a resource for recreation and ecotourism. Some visitors returned incomplete questionnaires. Like refusals, these were treated as lost interviews.

Despite some problems encountered, the survey was successful. The pilot exercise turned out to be extremely important by establishing, for example, that the visitors were willing to impart their answers, including answers to sensitive questions related to socio-economic profiles. These findings underline very firmly the need for pilot surveys, which can be used as a learning process as well as a test for the on-site questionnaire survey method.

6.4 Data Preparation and Analysis

Clerical Editing

All the questionnaires completed at the end of every week were collected from the field assistant and checked. Those with sheets either missing or not fully answered were separated. Where the answers were ticked or marked with a cross, they were circled instead. This made it easier to code the answers. Questions 3.1 and 3.8 were checked to ensure that the nationality and currency type indicated by the local and

foreign visitors matched. This was easily done because of the simple and straightforward format of the questionnaire.

Coding the Data

The process of coding the data involved assigning variable names to questions and numerical codes to the answers. Answers to open-ended questions were first grouped and then coded. Multiple answers were split up and each given a variable name. The same was done for ranked answers. For question, 2.6 constructed on a Likert-scale format, the answers were coded so that the last digit of the numerical code was taken as the value of attitude towards the site and facilities used in the analysis of variance. The frequency counts for each variable were then produced using the Microsoft SPSS software. The frequency counts also served as a further check on the data by highlighting unusual or unexpected frequencies. At the same time, it provided an early insight into the structure of the data and so acted as a preliminary guide to the analysis that was done later.

Weighting and Loading of Data: Why It Was Not Done

Essentially, weighting and loading of data are done before data analysis in order to reduce the difference between the actual information collected and the results expected. Although weighting and loading of data are strongly recommended in recreation studies, they are usually applied where the survey period is short and definite, the survey is affected by weather conditions, the study site has several entrances/exits, and visitors are interviewed at particular times of the day. In Kibale the situation was different. The tourist nature of the visits and lack of visit patterns influenced the survey design and procedure. Consequently, the data were not loaded and weighted. The omission of this important step may affect the significance of the results presented here.

Data Analysis

The analysis of the data was undertaken with the primary purpose of fulfilling the objective of the study. The data collected and the need to answer the questions asked earlier in section 6.1 dictated the type of analysis performed. Several types of analysis were carried out. SPSS (Statistical Package for Social Sciences) version 6.0 was used for the descriptive statistics to summarise the results, and Minitab (Version 10.2) was used for the analysis of variance.

6.5 What the Survey Found

6.5.1 Travel and Demographic Characteristics

Information about means of travel to recreation sites has been widely used in development of strategies for promotion of park use in many parts of the world. Demographic characteristics of visitors are needed for planning of site and visitor management. Knowledge of demographic characteristics is a first prerequisite of recreation planning. Since planning is, by nature, concerned with provision for the future, the information aids in making informed decisions about the kind of facilities to be provided.

Means of Travel

KNP is about 25 km from Fort Portal town on the Fort Portal - Kamwenge road (Figure 6.1). The road is rarely maintained and without public means of transport. As a result, access to the Park is very difficult. Quite often visitors without private means hire taxis or use the pick up trucks that transport people and merchandise between Fort Portal and Kamwenge. Given the transport difficulties, visitors were asked how they

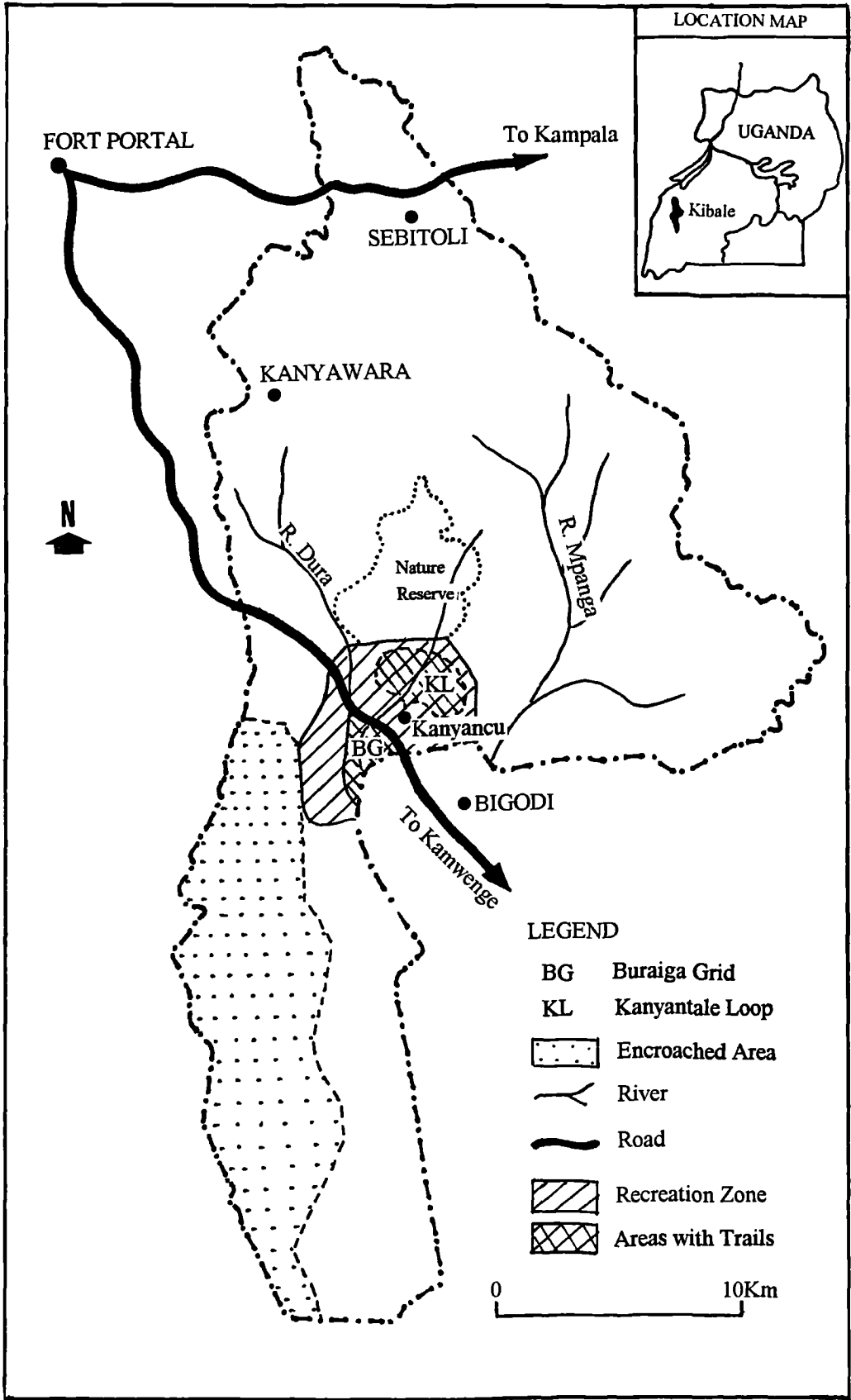
arrived at KNP. More than 60 per cent said they used private hired bus or tour minibus, and less than 30 per cent said they came by private car or taxi (Fig. 6.2).

One interesting aspect of travel to KNP is worth noting here. Generally, taxi hire from Fort Portal to KNP is expensive, but the fare is deliberately made higher for foreigners. The taxi operators believe that foreigners have plenty of money and as a result they are usually charged higher rates.

Visitor Numbers and Origin

As stated before, this study is also concerned with the environmental effects of recreation and ecotourism in KNP (already presented in Chapter 5). This aspect is revisited in this Chapter because of the relationship between visitor numbers and environmental impacts. Information on visitor numbers helps in monitoring and predicting likely impacts on a recreation resource. In this chapter an attempt has been made to answer the question "who are the visitors?". Data compiled from the visitors' register at KNP shows that the total number of visitors has risen annually since the introduction of ecotourism in 1992 (Table 6.1). In addition, there have been significant monthly variations (Table 6.2). Nearly 90 per cent of the visitors came from overseas and only a small proportion were Ugandans. The number of foreign visitors alone has also risen (Table 6.3), and so has the number of local visitors. A large proportion of local visitors are made up of school groups on study tours. For example, of the 58 Ugandans who visited the park in July 1995, 45 were students.

Figure 6.1 Map of Kibale National Park showing the location of the recreation area



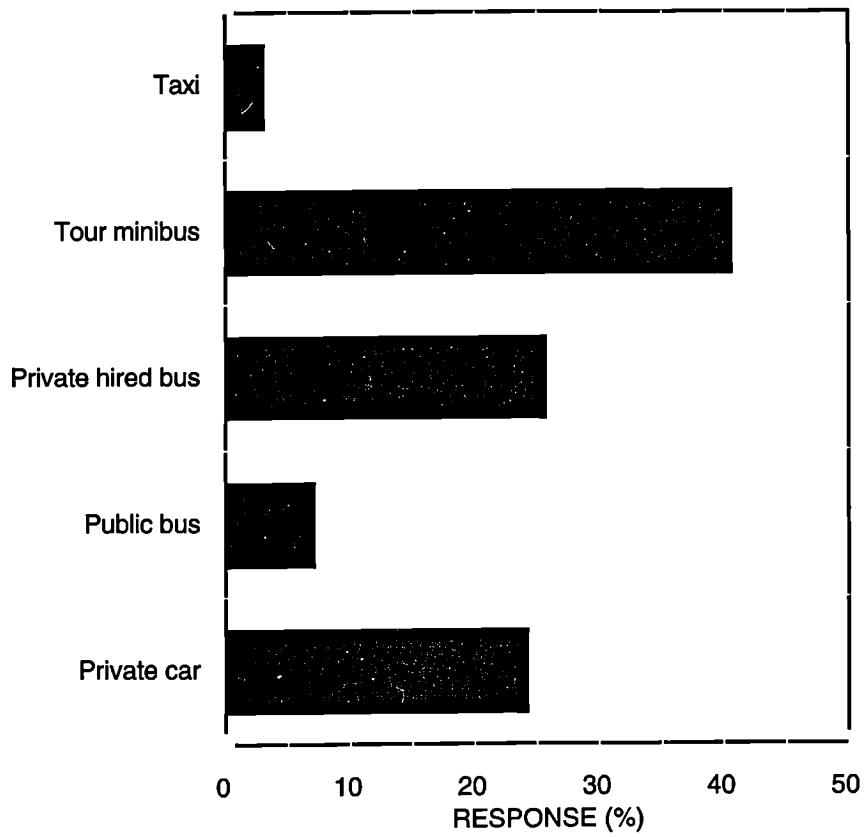


Figure 6.2 Means of transport used by visitors to Kibale National Park

Table 6.1 Origin, total number and monthly arrival of visitors at KNP (January 1992 - July 1995).

Origin	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ΣR
1992													
Europe	24	46	52	76	41	32	72	101	41	53	29	92	659
N/Ame [†]	9	28	17	17	26	19	15	27	15	11	16	10	210
Aus/NZ [*]	16	9	13	6	17	4	14	11	3	36	8	13	150
Uganda	4	5	26	15	10	1	13	19	35	40	11	57	236
Other	9	3	4	0	0	0	1	4	7	5	4	5	42
Total	62	91	112	114	94	56	115	162	101	145	68	177	1297
1993													
Europe	65	153	139	107	46	40	210	348	80	109	92	112	1501
N/Ame [†]	37	45	23	27	18	41	39	38	19	16	10	34	347
Aus/NZ [*]	7	74	68	35	14	49	53	92	57	124	80	49	347
Uganda	27	33	56	28	2	14	25	50	14	58	8	21	336
Other	5	7	3	10	8	11	8	16	53	6	7	6	140
Total	141	312	289	207	88	155	335	544	223	313	197	222	3026
1994													
Europe	163	247	147	101	32	36	244	207	111	75	70	110	1547
N/Ame [†]	42	73	26	18	7	18	70	37	11	13	17	12	344
Aus/NZ [*]	79	102	82	34	17	32	106	80	69	68	62	58	789
Uganda	40	72	25	42	7	2	33	19	6	150	19	35	450
Other	11	23	11	4	11	19	12	39	4	9	5	7	145
Total	3271	335	517	291	199	74	97	465	382	200	313	173	222
1995													
Europe	168	172	102	117	78	75	288						
N/Ame [†]	30	42	13	18	20	31	68						
Aus/NZ [*]	51	80	74	27	58	59	92						

Table 6.1 continued

Origin	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ΣR
Uganda	4	12	11	8	12	28	58						
Other	15	11	16	7	0	5	8						
Total	268	317	216	177	158	198	514						

ΣR = Row total

♦ = North America

* = Australia and New Zealand

Table 6.2 Analysis of variance of monthly visitor arrivals by country of origin (January 1992 - December 1995), N=200

Origin	Mean	P. std	F	P	Significance
Europe	102.86	66.60	4.67	0.016	*
Australia/New Zealand	45.58	25.0	16.02	0.000	**
North America	25.03	15.09	2.24	0.122	ns
Uganda	28.39	27.40	1.27	0.295	ns
Others	9.08	9.77	2.95	0.066	ns

* = Significant at P ≤ 0.05

** = Significant at P ≤ 0.01

ns = not significant

Table 6.3 The total number of visitors to KNP (January 1992 - December 1995) and the number of foreigners (in parentheses).

Month	YEAR							
	1992		1993		1994		1995	
	N	%	N	%	N	%	N	%
January	620(58)	93.5	141(114)	80.9	335(295)	88.1	268(264)	98.5
February	91(86)	94.5	312(279)	89.4	517(445)	86.1	317(315)	96.2
March	112(86)	76.8	289(233)	80.6	291(254)	87.3	216(205)	99.5
April	114(99)	86.8	207(179)	86.4	199(157)	78.9	177(171)	96.1
May	94(84)	89.4	88(86)	97.7	74(67)	90.5	168(156)	92.9

Table 6.3 continued

Month	YEAR							
	1992		1993		1994		1995	
June	56(55)	98.2	155(141)	91.0	97(95)	97.9	208(170)	81.7
July	115(102)	88.7	335(310)	92.5	465(432)	92.9	514(456)	88.7
August	162(143)	88.3	544(494)	90.8	382(363)	95.0		
September	101(66)	65.3	223(209)	93.7	200(194)	97.0		
October	145(105)	72.4	313(255)	81.5	313(163)	52.1		
November	68(57)	83.8	197(189)	95.9	173(154)	89.0		
December	177(120)	67.8	222(201)	90.5	222(187)	84.2		

The survey found that 91.5 per cent of the visitors were foreigners and 8.5 per cent were Ugandans (Fig. 6.3). The result compares quite well with the information in Table 6.3. The most striking observation in Figure 6.3 is the tiny proportion (3.7%) of visitors from South Africa. This can be explained by the recent improvement in the political situation and subsequent normalisation of relations between South Africa and other countries. This has made it possible for South Africans to travel to countries from which they were hitherto prohibited. About half of the foreign visitors surveyed came from Europe alone, and the rest from Australia/ New Zealand, and North America. From these results, it appears information about KNP as a tourist destination is better circulated in Europe than in other parts of the world.

Age, Sex and, Marital Status

Table 6.4 shows the visitors' age structure plus the number, age and sex of persons travelling in a party. It is clear from the table that visitors were predominantly aged between 25 and 44, and over half of these were females. On the other hand, there were fewer visitors aged 65 or over.

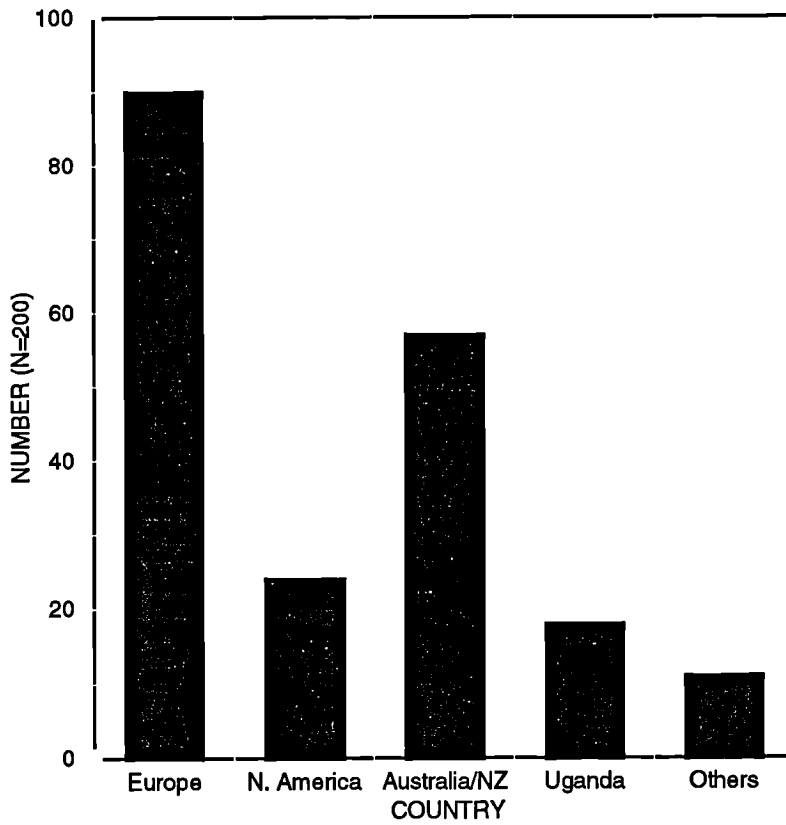


Figure 6.3 Proportion of visitors (by country of origin) surveyed at Kibale National Park.

Table 6.4 The age-sex composition of visitors surveyed at KNP (N=200).

Age (years)	Male	Female	Row total	% of N
15 -24	24(12.0)	36(18.0)	60	30
25 - 44	43(21.5)	68(34.0)	111	55
45 - 65	19(9.5)	7(3.5)	26	13
Over 65	2(1.0)	1(0.5)	3	2
Total	88(44)	112(56)	200	100

Less than 10 per cent of the visitors came on their own while about one third came in the company of friends (Table 6.5). Nearly half of the groups had one to five persons. However, the average group size was eight persons comprising of three males and five females. The proportion of single persons was the highest. The rest (31%) were either married, divorced or widowed.

Based on the above observation it can be said that married people have less time for outdoor recreation than single ones and agrees with an earlier observation by Seeley (1973) noted in Chapter 3, that family responsibilities take up much of the time of married people who then rarely engage in leisure and outings. For single people, on the other hand, lack of family commitments leaves them with plenty of time for leisure including opportunities for travelling abroad as ecotourists. This observation leads on to the question of purpose of visit which is presented in the next sub-section.

Table 6.5 Marital status, size, type and composition of party surveyed at KNP (N=200).

Subject	Frequency (f)	Percentage (%)
Marital status		
Married	55	27.5
Single	138	69.0
Divorced	5	2.5
Widowed	2	1.0
Size of party		
1 - 5	102	51
6 - 10	30	15
11 - 15	34	17
16 - 20	26	13
Over 20	8	4
Mean	7.96	-
Composition of party		
Average No. of males per party	2.74	-
Average No. of females per party	5.30	-
Type of party		
None (alone)	13	6.5
In the company of friends and/ relatives	65	32.5
In a tour package	111	55.5
In school group	11	5.5

Purpose of Visit and Trip Organisation

Visitors were asked to state the purpose of their visit and over four fifths indicated that they were on vacation (Table 6.5). Five percent were either on business or visiting friends and relatives. One tenth were school groups on study tour. This underscores the importance of protecting and managing KNP not only for ecotourism, but for environmental education as well.

Some of the findings on visitors' trip making habits are presented in Table 6.6. Nearly all (96%) were visiting for the first time. Only 3 per cent were repeat visitors. The main reason given for second time visits was to have another chance of seeing the chimpanzees (*P. troglodytes*) allegedly missed on the first visit. Those who were visiting a second time claimed they were not influenced by any publicity material about KNP in deciding to return. The majority of the visits were planned beforehand (Table 6.6) and very few (15%) said they came on local advice.

About one third of the visitors heard about the Park as a place to visit from tourist guide books. Although more than half had earlier (Table 6.5) admitted that they came on a tour package, only about one third confirmed that they visited KNP because it was included in the tour itinerary (Table 6.6). A significant proportion (22%) claimed they learnt about the Park simply by word of mouth. This finding agrees with that of Locke (1985) who reported that in UK the majority of people who visit the country parks often hear about them casually from friends rather than through formal channels like advertisements or from tourist information centres. In the present case, the survey found that less than 10 per cent of the visitors learnt about the park from advertisements in either magazines, newspapers or posters. Only one person claimed that he learnt about KNP from a hotel, and another respondent said he heard about the park on a radio/television programme. At this point, attention needs to be drawn to some of the

claims stated above.

The findings reported here should be interpreted cautiously as it is by no means true that ecotourism in Kibale is being advertised on radio and television anywhere in the world. KNP's budget cannot finance a wider marketing strategy at the moment. Even local newspapers in Uganda do not carry advertisements about KNP as a place to visit. Since the claims were made by a minority, it can be assumed that their views do not represent that of the larger body of visitors who go to KNP.

Table 6.6 Purpose of visit, trip habits, and sources of information about KNP given by visitors (N=200).

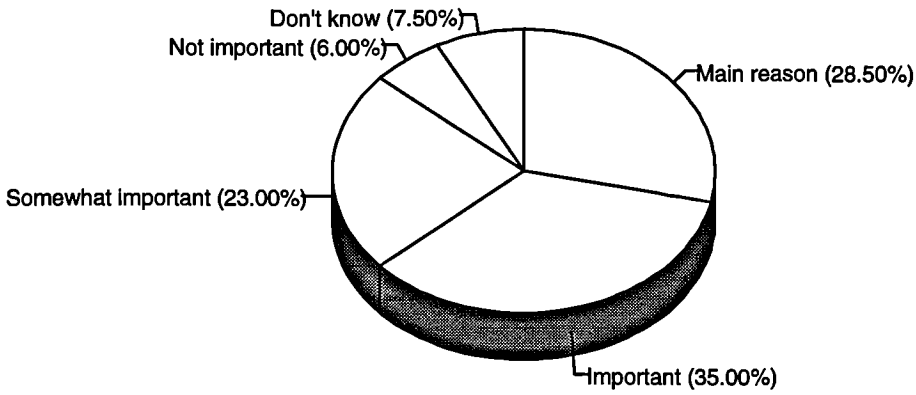
Subject	Frequency (f)	Percentage (%)
Purpose of visit		
On vacation	169	84.5
On business	5	2.5
Visiting friends/relatives	6	3.0
On study tour	20	10.0
Visit frequency		
First time	193	96.5
Second time	7	3.5
Organisation of travel		
Planned before hand	170	85.5
Came on local advice	30	15.0
Sources of information		
From advertisements, e.g. newspapers	10	5.0
Tourist guidebooks	77	38.5
Hotel	1	0.5
Radio/TV programme	1	0.5
Word of mouth from friends /relatives	44	22.0
Part of tour itinerary	67	33.5

Reasons for Choosing to Visit and the Attractions

Various reasons were given for choosing to visit KNP. Five reasons were listed in question 1.10 and visitors were asked to rank them from most to least important. About three quarters said their main reason for visiting was to view the wildlife. Over half stated the forest and its diversity as the second major reason. Nearly 50 per cent gave the tropical setting as the third reason, and a similar proportion named the culture and the people as the fourth reason (Figure 6.4). The peace and quiet were of less significance in choosing to visit and were given as the fifth reason by over half of the visitors.

Responses to the question on the idea of protected areas as an important reason in deciding to visit produced the following results: about 30 per cent claimed it was the main reason, another 35 per cent said it was important, whilst 20 per cent felt it was somewhat important, and 15 per cent thought it was either not important or simply did not know (Figure 6.5). When asked about the form of wildlife which interested them most, over three quarters mentioned the forest primates, 7.5 per cent said the trees, another 5.5 per cent indicated birds, and 2 per cent seemed especially interested in butterflies (Figure 6.5). It is clear from these responses that visitors to KNP are attracted by different kinds of wildlife. They appear to perceive nature in different ways as shown by their appreciation of various forms of wildlife. It would be reasonable to assume that visitor participation in activities at KNP are influenced by individual interests in wildlife, but as it will be seen in the next subsection, this was not the case.

Idea of Protected Areas
Whether important in deciding to visit



Wildlife Attractions in Kibale
What interested visitors most

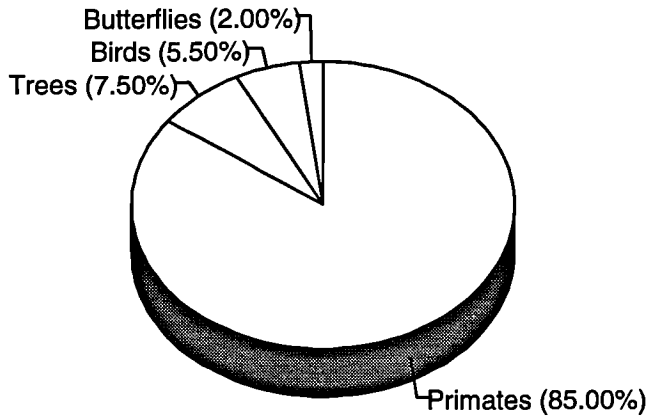
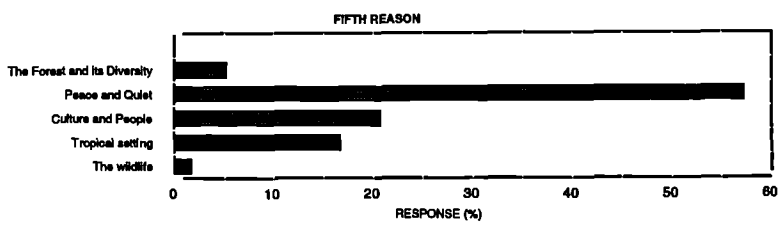
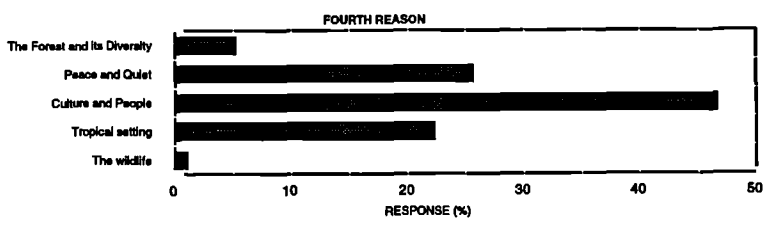
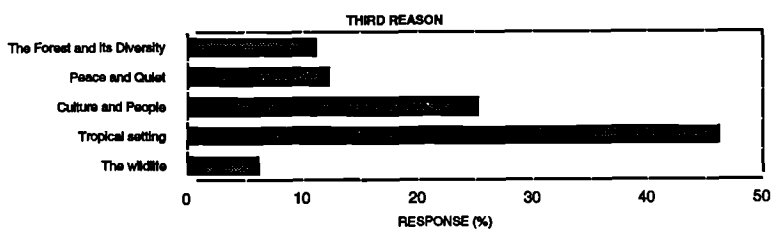
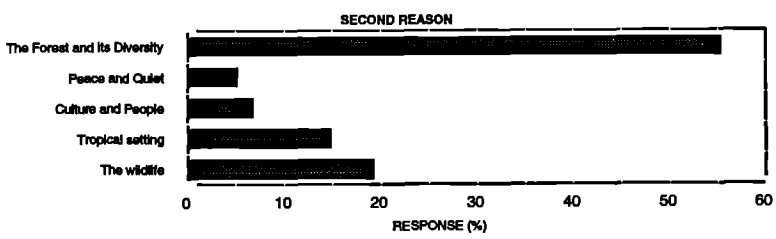
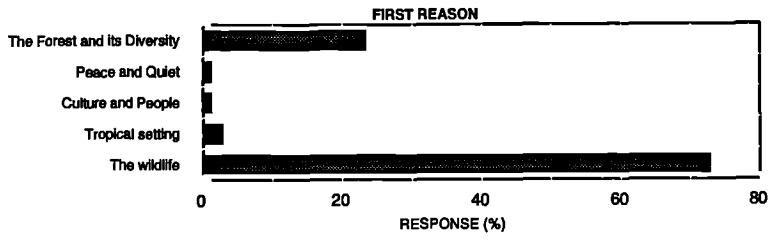


Figure 6.4 Importance of the idea of protected areas in choosing to visit and the forms of wildlife that attracted visitors.

Figure 6.5 How the visitors ranked their reasons for choosing to visit Kibale National Park



6.5.2 Activities Participation, Preference, and Area Description

In this sub-section, three main aspects of the survey are presented. These are the activities participated in during the visit, the activities enjoyed most, those preferred and expected, and the attitudes of visitors towards management of the site and facilities.

Activity Participation

Visitors were asked to indicate from a list of 10, the five major activities they participated in during their visit and the results suggest that the most popular were wildlife viewing, bird watching, nature walks, hiking, and relaxing (Figure 6.6). Table 6.7 shows the same activities the visitors participated in and how they were ranked from the most enjoyed to the most uncommon.

Table 6.7. Visitor participation in activities at KNP (N=200).

Activity	Frequency (f)	Percentage (%)	Ranking
Wildlife viewing	196	98.0	1 ^a
Bird watching	98	49.0	5
Nature walks	166	83.0	2
Walking to scenic points	74	37.0	7
Sitting and enjoying the views	105	52.5	4
Photography	137	63.5	3
Camping	57	28.5	9
Hiking	69	34.5	8
Relaxing	97	43.5	6
Picnicking	8	4.0	10 ^b

a = most enjoyed activity

b = most uncommon activity

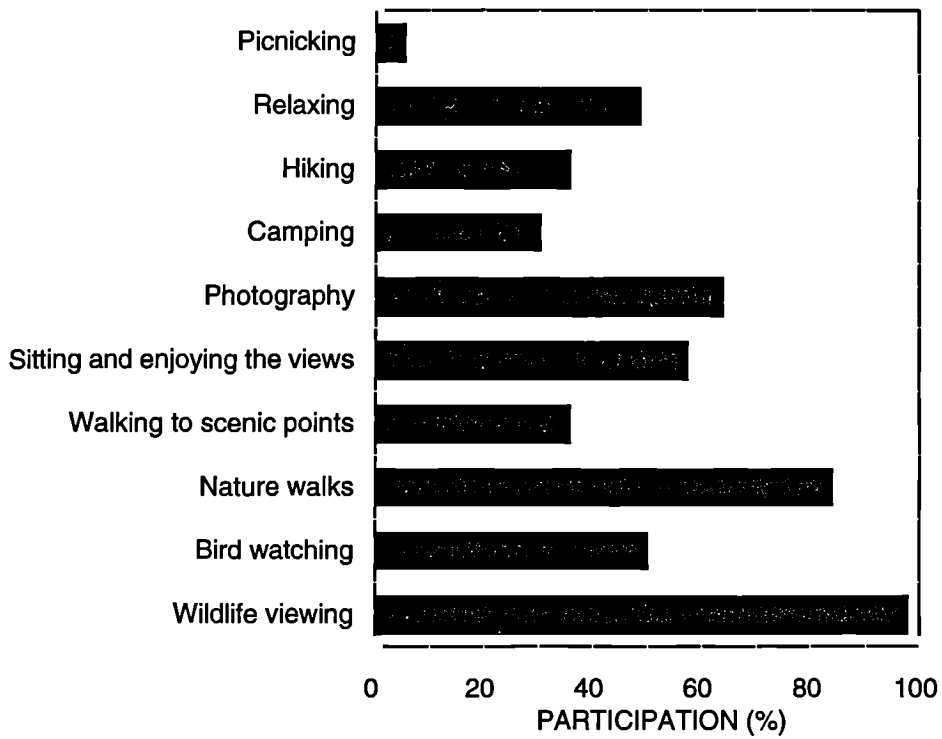


Figure 6.6 Activities participated in by visitors at Kibale National Park (N=200).

Association between visitors' interest in wildlife and activity participated in was sought by cross tabulation. Table 6.8 shows that the correlations were very weak. In many cases there were no correlations at all. The most surprising is that even where the association looked very obvious, no significant correlations were shown by the cross tabulation. For example, there was no significant correlation between "peace and quiet" and "relaxing". At the same time, there was no significant correlation between "wildlife" and "bird watching", or "nature walks". The most probable factor that can be used to explain these fairly odd observations is the small sample size used in the study. Perhaps a sample size of 200 was not adequate to enable a more realistic cross tabulation. It is possible that with a much bigger sample size (> 200) significant relationships between the reasons and the activities presented in Table 6.8 could be observed.

Table 6.8 Correlation matrix showing the relationship between visitors' reasons for choosing to visit and the activities participated in at KNP. The correlation coefficients are Spearman's rho. Values in brackets are probability levels; and N=200.

REASON	ACTIVITY				
	Wildlife viewing	Bird watching	Nature walk	Photography	Relaxing
- The wildlife	0.19(0.008)**	0.01(0.81)	-0.07(0.32)	0.04(0.57)	0.09(0.19)
- Tropical setting	-0.09(0.20)	-0.12(0.10)	-0.04(0.54)	-0.14(0.04)	-0.18(0.008)
- Culture and - People	0.01(0.16)	0.05(0.47)	0.04(0.56)	-0.07(0.31)	0.004(0.95)
- Peace and Quiet	-0.108(0.13)	0.02(0.76)	-0.009(0.90)	0.03(0.63)	0.08(0.26)
- Forest and its diversity	0.02(0.79)	0.08(0.24)	0.11(0.11)	0.15(0.04)*	0.05(0.49)

* = Significant correlation at $P \leq 0.05$

** = Significant correlation at $P \leq 0.01$

Similarly, correlations between the reasons for choosing to visit and the activities "enjoyed most" were weak (Table 6.9). Again, the explanation is thought to be the same as the one already given above. Under normal circumstances, one would expect a

significant correlation to exist between wildlife as a reason for visiting and nature walks as the most enjoyed activity, but it was not possible to demonstrate this statistically. There were, nonetheless, significant associations, almost as expected, between sitting and enjoying the views and forest diversity, wildlife and wildlife viewing, photography and forest diversity, and relaxing and forest diversity (Table 6.9).

Table 6.9 Correlation matrix showing the relationship between visitors' reasons for choosing to visit and activity enjoyed most at KNP. The correlation coefficients are Spearman's rho; values in brackets are probability levels, and N=200.

REASON	Wildlife viewing	Nature walk	ACTIVITY Sitting and enjoying the views	ENJOYED Photography	MOST Relaxing
- The wildlife	0.37(0.000)**	-0.12(0.10)	0.23(0.001)**	0.05(0.46)	0.02(0.80)
- Tropical setting	-0.20(0.01)	-0.06(0.39)	0.16(0.02)*	-0.08(0.27)	-0.08(0.25)
- Culture and - People	-0.20(0.004)	0.21(0.003)**	-0.04(0.53)	-0.12(0.09)	-0.03(0.65)
- Peace and Quiet	0.11(0.11)	0.02(0.76)	-0.05(0.45)	0.08(0.26)	-0.05(0.49)
- The forest and its diversity	-0.15(0.03)	0.04(0.58)	0.17(0.02)*	0.04(0.53)*	0.20(0.01)**

* = Significant correlation at $P \leq 0.05$

** = Significant correlation at $P \leq 0.01$

Activity Preference

A summary of the activities the visitors said they would have liked to participate in if it were possible is presented in Table 6.10. For some of the activities, opportunities are not available at KNP, for example, swimming and fishing. Although the Dura and Mpanga Rivers (see Figure 6.1) drain through the park, KNP has not developed water-based recreation activities. Even the Kanyancu River which flows past the visitors' centre is silted in many parts and therefore too shallow for swimming. The fish population is said to be very low, so fishing is not possible either. However, over time the crater lakes in the Park's neighbourhood could be developed for water-based sports. But the health

status of the lakes will need to be known because according to Doumenge *et. al.* (1987), most areas around Fort Portal have high prevalence of *Schistosomiasis mansoni* parasites often responsible for river blindness in humans. At the moment, tourists can only go swimming in the lakes by special arrangement with the Park Authority. But

Table 6.10 Summary of activities visitors would prefer to participate in at KNP if it were possible.

Preferred Activity
- Scenic sports
- Night watching of bush babies
- Elephant tracking
- Unaccompanied forest walks
- Swimming
- Night viewing of moths
- Fishing
- Direct contact and night watching of chimpanzees

Attitudes Towards the Site and Facilities

One of the aims of the survey was to find out what the visitors think about the management of park's recreation site and facilities and to obtain suggestions about possible improvements. The results show that visitors' had low opinions about the facilities at KNP and the common feeling was that most of the facilities were generally poor (Table 6.11). However, they were impressed by the trails which the majority of visitors felt were good. Others felt that the car park, map and area information service, and the resting huts were just satisfactory. Analysis of variance of the attitudes shows that there were significant differences in the opinions reported above ($F= 41.75$ and $P \leq 0.01$). These findings are not unusual for two reasons. First, forest ecotourism is still

fairly new in Uganda, so it can be argued that the managers of KNP lack the experience required for maintaining good standards of recreational facilities. Secondly, it appears the Park Authority has concentrated more attention on conservation than ecotourism management. The danger of such a management approach is that ecotourism is likely to decline. The number of visitors will also drop together with the revenue collected.

Table 6.11 Visitors' attitudes towards the site and facilities at KNP. Values in brackets are percentages of response, and N=200.

FACILITY	RESPONSE						Mean	Std	
	Very poor	Poor	Satisfactory	Good	Don't know				
Access	4(2)	8(4)	50(25)	117(58.5)	21(10.5)		3.2	1.3	
Campsite	1(0.5)	2(1)	24(12)	61(30.5)	112(56)		1.6	1.9	
Car park	4(2)	7(3.5)	62(31)	51(25.5)	76(38)		2.0	1.7	
Fire place	1(0.5)	3(1.5)	29(14.5)	53(26.5)	114(57)		1.5	1.8	
Litter bins	5(2.5)	19(9.5)	54(27)	30(15)	92(46)		1.6	1.6	
Map and Area IS ⁺	6(3)	12(6)	48(24)	55(27.5)	79(39.5)		2.0	1.7	
Shower and wash room	15(7.5)	28(14)	15(7.5)	9(4.5)	133(66.5)		0.7	1.2	
Picnic tables and benches	3(1.5)	11(5.5)	52(26)	42(21)	92(46)		1.7	1.7	
Tent shelter	0(0)	2(1)	18(9)	55(27.5)	125(62.5)		1.4	1.8	
Toilet	8(4)	22(11)	43(21.5)	42(21)	85(42.5)		1.7	1.6	
Watch tower	0(0)	4(2)	29(14.5)	52(26)	115(57.5)		1.5	1.8	
Trails	0(0)	4(2)	19(9.5)	166(83)	11(5.5)		3.6	0.9	
Water supply	25(12.5)	18(9)	24(12)	27(13.5)	106(53)		1.2	1.5	
Resting place	1(0.5)	6(3)	33(16.5)	81(40.5)	79(39.5)		2.1	1.8	
Anova results:	F = 41.75		P ≤ 0.01						
Attitude scale:	0 = Don't know		3 = Satisfactory						
	1 = Very poor		4 = Good						
	2 = Poor								
	+ = Information Service								

It is pertinent at this point to note that several visitors who completed the questionnaires were tourists in transit. As would be expected, they had very little time to

use the facilities so as to form a proper opinion on them. As such the opinion reflected by the results presented here could have been very different if all the respondents had time to use the facilities.

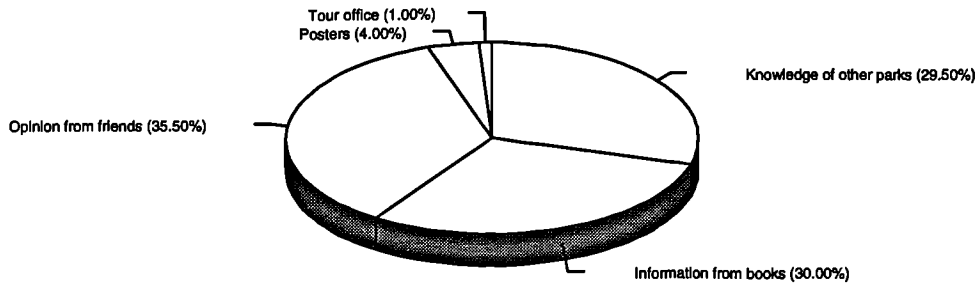
Expectations and Visit Experience

About one third of the visitors stated that they got a picture of what KNP would be like from printed information (e.g. posters, tourist guidebooks etc.). A similar proportion said opinion from other people (e.g. friends and relatives) gave them a picture of what the park would be like (Figure 6.7). Another one third stated knowledge of parks previously visited which they claim gave them the picture of what to expect. This shows that the visitors are experienced travellers with good knowledge of qualities of recreational facilities present elsewhere. Thus, they would expect to find similar facilities at KNP.

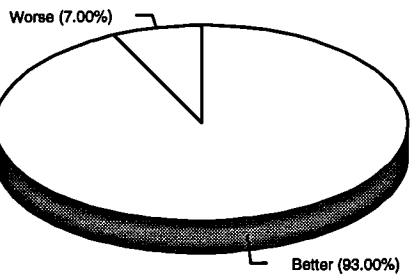
The survey also assessed whether the visitors' experiences of the Park were in line with what they expected. On balance, the majority (93%) said their visit turned out to be better than expected, while 7 per cent felt that it was worse (Figure 6.7). The reason behind the visitors' "worse" response is that they never saw the chimpanzees. It is clear that the chimpanzees are the main attraction in Kibale and visitors get very disappointed when they fail to see them. Although the travel guidebook "The Lonely Planet: Africa Edition" (Crowther *et. al.*, 1995) states that the chance of seeing the chimpanzees in Kibale is only 25 per cent, in reality it is much higher especially when one walks into the forest very early in the morning before 7 am. Asked whether they would return on a future date, 87 per cent said they would if it were possible, and 13 per cent said they would not because they want to visit other places as well (Figure 6.7).

Figure 6.7 Visitors' expectations and the visit experience at Kibale

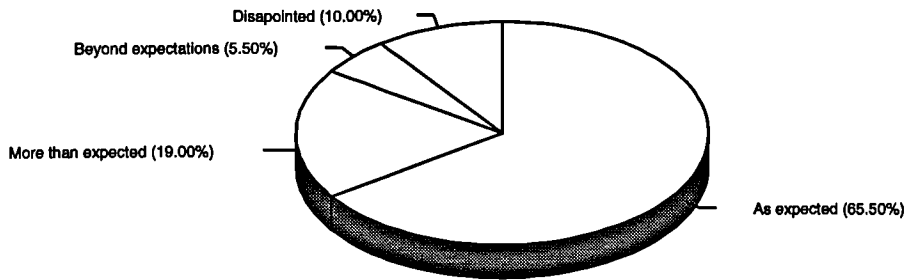
Visitors' Feelings About the Park
 What gave visitors the picture of KNP



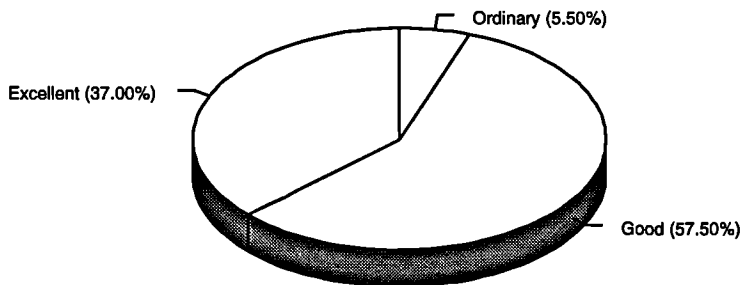
Visit Experience
 What the visits turned out to be



Visit Expectations
 Comments made after the visits



Overall Impression
 Summary description of visits



The response to the questions on visit experience (questions 2.4 and 2.10) confirms the visitors' feelings mentioned above. When asked to state whether the visit turned out to be as expected or there were some ways in which it was different, 10 per cent said it was disappointing. These responses most probably came from those who never managed to see the chimpanzees. About 70 per cent found the visit in line with their expectations. Virtually all the remaining 24.5 per cent thought it was more than they expected. These expectations were hazily defined, so the figures reported here must be treated with care. The time spent at the Park by the majority of respondents was too short for them to give a true picture of their expectations.

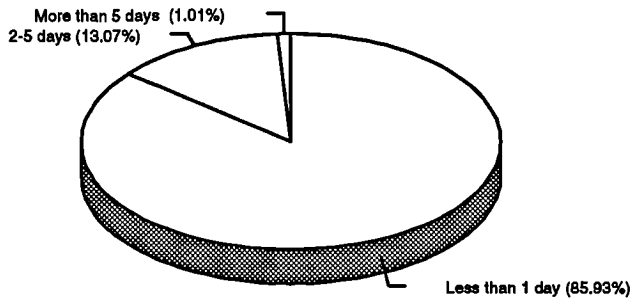
Length of Visit, Accommodation and Expenditure

The survey found that more than four fifths of the visitors stayed less than one day at the Park, 35 per cent stayed from 2 to 5 days, and a very small proportion (1%) stayed more than 5 days (Figure 6.8). It is presumably visitors who come on pre-planned tour packages or school groups on educational tours who spend more time at the Park. While in Kibale, visitors stay in different kinds of accommodation. For example, 37.5 per cent said they lived in either hotels in Fort Portal or in lodges in the nearby shopping centres. Another 37.5 per cent stated that they lived in tents at the campsite; while 25 per cent claimed they camped on private compounds.

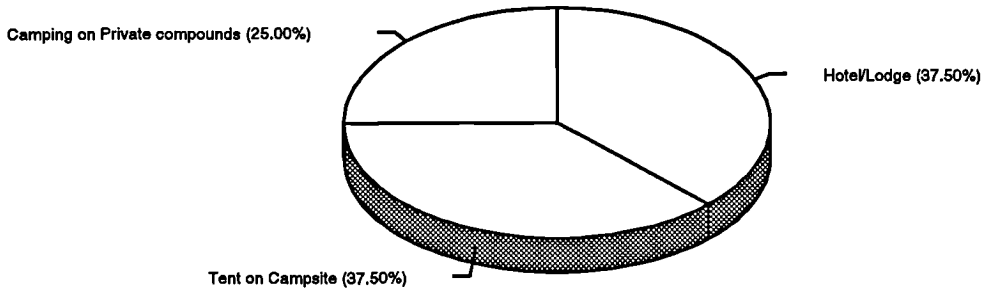
Figure 6.8 shows the visitors' daily expenditure on accommodation, food and drinks. Nearly all of them spent less than US \$ 20 per day on food and drinks, and a similar amount on accommodation. The low expenditure can be explained in terms of the rural location of the Park, as such food and accommodation are generally very cheap.

Figure 6.8 Length of visit, type of accommodation and expenditure of visitors surveyed in Kibale

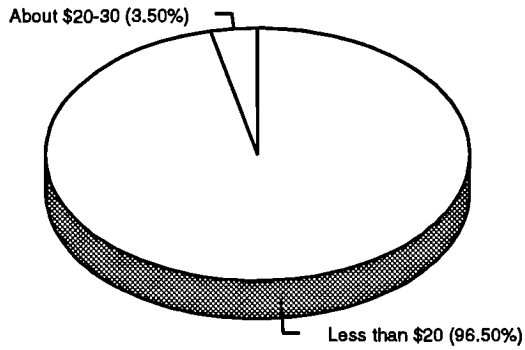
Visit Duration
Number of Days Spent at the Park



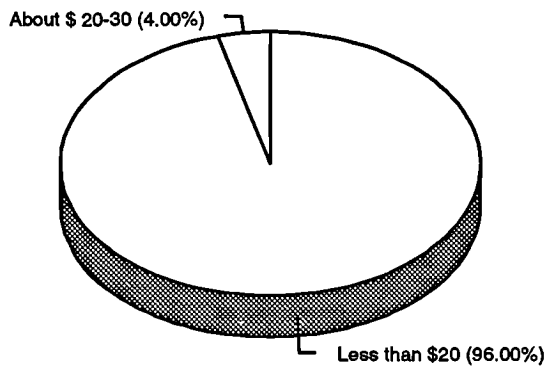
Type of Accommodation



Daily Expenditure on Accommodation



Daily Expenditures on Food and Drinks



Suggestions for Improvement of Services and Facilities

Response to the open-ended question on possible improvements or developments the visitors would like to see at the Park was in favour of major improvement of the current services and facilities. A summary of the suggestions put forward for improvement of services and facilities is presented in Table 6.12, while proposals regarding provision of new facilities and additional services are given in Table 6.13. The most interesting suggestion was perhaps the one noted at the bottom of Table 6.13. The visitors shared two major views. The first was that no additional facilities should be provided at the Park and the second was that the number of visitors should be kept low. This illustrates how visitors are concerned about the Park and the suggestions need to be taken seriously especially when they come from visitors. It would appear from these results that visitors to KNP are already enlightened on the need for resource protection. When implementing the proposed environmental education programme, therefore, the managers ought to realise that they are dealing with people who are already conservation conscious.

Table 6.12 Suggestions by visitors towards improvement of services and facilities at KNP.

SUGGESTIONS

Improvement of current services

- The canteen should be opened for much longer time
- Toilet paper, hot shower and doors on toilets should be provided
- A talk should be given about the forest before setting out for the walk
- More local crafts and souvenirs should be stocked in the women's gift shop
- Camping fees should be reduced
- Running (tap) water should be provided
- Information about KNP as a tourist destination should be circulated more widely
- Local people should be involved in providing services at the Park

Table 6.12 continued

SUGGESTIONS

Improvement of current services

- Visitor numbers should be kept low and some of the revenue put back into conservation work

Improvement of current facilities

- Wash rooms should be kept clean
 - Car park should be relocated elsewhere and improved
 - Duck boards should be installed in the boggy areas
 - Simple wooden steps should be installed at breaks in slopes on the trails
 - Drainage on camping sites should be improved to reduce muddiness
 - Additional cooking places should be provided
-

Table 6.13 Suggestions for provision of additional services and facilities at KNP.

SUGGESTIONS

Additional services

- More litter bins should be provided
- Breakfast should be prepared for those staying over night at the campsite
- Map and area information system should be improved
- Binoculars and rubber boots should be made available for hire during wet weather
- Video documentary about the forest should be made and shown to visitors on arrival
- Unguided walks should be allowed

Additional facilities

- Bird blinds and primate observation platforms should be provided
 - Transport (shuttle) to Fort Portal should be provided
 - Additional entrances into the Park should be provided for unguided walks
 - A park museum should be constructed to display more information
 - Additional resting bandas (huts) should be constructed
 - No additional infrastructure, keep the Park as it is
-

6.5.3 Socio-Economic Characteristics

Introduction

Visitors' profile data are fundamental to recreation planning. There is evidence that profile characteristics are correlated with people's behaviour and de Vaus (1985) has examined the reasons for collecting profile data in social surveys. It can be implied from his observations that even in ecotourism management profile data can be used for forecasting future levels of activities. An earlier observation by Douglass (1975) shows that the use of recreation areas is partly explained by the visitors' profile data. He noted that visitors' profile data helps to explain the style of visitor participation in activities. He further added that recreation demands can also be predicted from profile data alone.

In this study, profile data of visitors were sought bearing in mind the difficulties often associated with obtaining such information. It is clear from much of the literature that people are usually reluctant to provide information about their socio-economic status. To this end, the survey sought information on, for example, the actual incomes by providing the income groups only. The rest of the results on the socio-economic characteristics are presented in separate sub-sections below.

Education and Occupation

Most visitors (52%) were university graduates and about one third were graduates from colleges. A smaller proportion (10%) were secondary school leavers and only one person (0.5%) had primary education only (Table 6.14). Of interest was that 2 per cent indicated they were self taught. Judging from these results, it appears poorly educated people do not travel abroad very much and are less likely to visit places such as Kibale National Park.

Table 6.14 shows that more than half of the visitors were professionals in different disciplines. For instance, 13.5 per cent were in administrative or management positions. About 7 per cent were in clerical work, and nearly 5 per cent were in business. About 3 per cent were servicemen, and a similar proportion (3%) were retired. Two visitors (1%) were housewives, and the rest (15%) per cent were students.

Table 6.14 Socio-economic characteristics of visitors surveyed at KNP (N=200).

	f	(%)
Education		
Self taught	4	2.0
Primary school	1	0.5
Secondary school	20	10.0
College/Institute/Polytechnic	70	35.0
University	52	26.0
Employment		
Government employed	46	23.0
Self-employed	23	11.5
Employed in the private sector	75	37.5
Retired	6	3.0
Housewife	2	1.0
Student	30	15.0
Unemployed	18	9.0
Occupation		
Professional/Technical	113	56.5
Administrative/Executive/Management	27	13.5
Clerical work	13	6.5
Service work/Armed forces	6	3.0
Sales work/Business	9	4.5
Housewife	2	1.0
Occupation		

Table 6.14 continued

	f	(%)
Other (Student)	30	15.0
Monthly Income		
(a) Foreign visitors (US \$)		
500 - 1 500	70	35.0
1 501 - 2 000	39	19.5
2 001 - 5 000	55	27.5
Over 5 000	19	9.5
(b) Local visitors (Uganda Shillings)		
10 000 - 50 000	13	6.5
51 000 - 100 000	3	1.5
101 000 - 200 000	-	-
Over 200 000	1	0.5

Employment and Income

As already reported above, most of the visitors were university graduates in professional positions. This was confirmed by responses to questions on employment and income. Over 70 per cent of the visitors were employed. Together, 60.5 per cent were employed either in government or the private sector, and about 10 per cent were self-employed. Of the 24 per cent unemployed, 15 per cent were students. Since ecotourism involves travelling to distant places and requires substantial amounts of money, the finding that the majority of the visitors were employed is expected. From these findings and those of Burton (1971) and Seeley (1973), it can be said that employment and income greatly determine one's participation in recreational activities, and it is logical to conclude that this applies in ecotourism as well.

More than one third had monthly earnings between US\$ 500 and 1 500, and about 20 per cent earned between US\$ 1 001 and 2 000. Another one third earned

between US\$ 2 001 and 5 000, while nearly 10 per cent earned over US\$ 5 000. Compared to the local visitors, the monthly earnings of foreign visitors were about 20 times higher and this must be a factor in explaining why very few Ugandans visited the Park. The purchasing value of the US dollar in Uganda gives foreign visitors a considerable advantage over Ugandans. Foreign visitors are more able to meet their travel costs and other expenses than local visitors would be. Foreign visitors, even if in the low income category in their countries, are much better off financially than people in the high income group in Uganda. Therefore, it is not surprising that over 90 per cent of the visitors surveyed were foreigners who could afford leisure trips to Kibale.

The absence of local visitors in the Shs. 101 000 to 200 000 monthly income group merits mention here. In Uganda, people in this income category would be described as "middle working-class" with a relatively high standard of living and possibly some extra income to spend on leisure. It is mysterious that the survey found no visitor in this income class. However, as noted by several authors before, several factors influence the decision to participate in outdoor recreation, and income is just one of them. So, it would probably be incorrect to conclude, on the basis of income alone, that Ugandans in the Shs 101 000 to 200 000 income category are not able to afford visits to Kibale because of financial constraints. Other factors could have been responsible and would need to be considered as well.

6.6 Conclusions

Several conclusions can be made from the results presented in this Chapter. The following stand out in particular and not all of them might have been expected. Nearly all the people visiting Kibale National Park are foreigners. The majority are young-to-middle aged adults, with far fewer older people. Many are on vacation and are visiting for the first time. The majority of the trips are planned before hand and visitors come

mainly to view wildlife, to camp and relax in the forest. Douglass' (1975) observation agrees with this finding. In his book on "Forest Recreation", he noted that the forest provides a natural and peaceful setting that many visitors desire for relaxation. On the other hand, Thompson (1995) reported that the beauty of nature attracts many people to the forest. In his view, perception of the beauty of nature arises out of self-creation which requires freedom from non-natural settings. This study has shown that many people visit Kibale National Park because of the need for direct contact with nature.

Earlier reports by Ryel and Grasse (1991) support many findings of the survey. In their opinion, people who dominate the pleasure travel and ecotourism in the world today are men and women aged 45 to 65 years, the majority have obtained college degrees, their occupations are professional, and their household income and buying power are high. Furthermore, the amount of leisure time at their disposal is great, and many are financially independent and retired. It is tempting to compare these observations with that of Kibale, but the difficulty would be in the relatively short time that ecotourism has been operational, and the lack of data from previous research to enable comparisons to be made. The most pressing issue has been the need to assemble information for making rational management decisions about the Park. This study has endeavoured to provide such information.

Understanding visitor characteristics is a principal aspect of sustainable tourism. While it may not be possible to acquire a full range of information on site use at Kibale, the gradual acquisition of information for a range of different activities would greatly aid the planning and management process. The provision of good quality services and facilities as demanded by visitors will depend to a large extent on sound management and will require knowledge of visitors' expectations. In this way, visitor satisfaction will be improved, but will require maintenance of a good recreation environment. The level of satisfaction would be known by getting feedback from visitors themselves, and the

visitor survey provides one means of getting such feedback. In order to maintain both the satisfaction and recreation environment, greater visitor control would be needed.

One suggestion raised by visitors was the provision of extra access into the park for unguided walks. This suggestion could have been prompted by the desire for quiet and solitary moments in the forest. It is very unlikely that unguided walks will be allowed in Kibale because doing so would mean loss of control on the visitors and the forest environment. Experience in Costa Rica (see Rovinski, 1991) has shown that unaccompanied visitors tend to molest wildlife. Similar problems could be experienced in Kibale if visitors are allowed to walk without guides. The chimpanzees in Kibale have been habituated so that visitors can view them at close range. Overzealous visitors could take advantage of moments when they are very close, to molest the animals. The most appropriate solution is to maintain guided walks because the presence of a guide helps to control such behaviour.

CHAPTER 7

LOCAL PERCEPTION OF CONSERVATION AND ECOTOURISM IN KIBALE NATIONAL PARK

7.1 Introduction

Abel and Blaikie (1986) have described national parks as a means of using natural resources for conservation, recreation, research, and tourism. They have also noted that resources from national parks can be used in a number of ways. According to IUCN (1992b), park resource use involves a compromise between groups with conflicting interests and aims. From the vast amount of literature available, it is clear that relationships between local communities and natural resources have been widely documented (e.g. Freudenburg and Gramling, 1995; and Overdevest and Green, 1995), but few studies have examined the relationships between park resource use by local communities, conservation and ecotourism. This chapter presents the findings of a study carried out to assess firstly how local communities living around Kibale National Park use resources from the Park. Attempts were also made to examine local communities' willingness to participate in management of the Park. As noted by Dasmann (1984), McCracken (1989), Bell (1989), and Little and Brokensha (1989) there is a need for involving local communities in management of resources in protected areas.

An account of the significance of local community participation in tourism planning and development has been given by Pigram (1992). He stresses that local participation in conservation and protected area management is essential. In Uganda, local community involvement in management of resources in protected areas is increasingly gaining recognition. In Kibale, local participation is expected to play a crucial role in both resource conservation and management of ecotourism. However, this will depend on the attitudes local people hold towards the Park. Since the introduction of ecotourism little

has been done to assess these attitudes. As a result, it was felt necessary to look at local communities' perception of conservation as well as their attitudes towards ecotourism development.

7.2 Subjects Addressed in this Chapter

This chapter is principally concerned with the relationship between local communities and the Kibale National Park. It is evident from several sources that the main causes of people-park conflicts are illegal harvesting of forest products, livestock grazing, crop damage, and threats to humans and livestock caused by wild animals. These conflicts often indicate reciprocal relationships that exist between parks and local people and in some ways reflect the attitudes of local people towards parks. Nepal and Weber (1995) have discussed how local people get accustomed to trespassing park boundaries to obtain resources despite strict rules and regulations governing park resource use. In this study, it was assumed that local communities in Kibale still obtain forest products from the park and that the practice conflicts with the park's conservation goals. A survey was therefore carried out to assess the following:

- (a) household composition of local communities living around the Park;
- (b) current Park resource use and value of the resources to local communities;
- (c) whether local communities would be willing to participate in management and conservation of the Park ; and
- (d) local perception of conservation and ecotourism in Kibale.

7.3 Research Questions and Hypotheses

In many protected areas ecotourism provides a case in which conservation and local community interests can be considered at the same time. In Kibale, the success of

ecotourism will depend upon the extent of Park resource use and support given by local communities. In view of this it was hypothesized that people living in close proximity to the Park have lost their traditional rights of access and use of forest resources following the establishment of Kibale National Park and subsequent introduction of ecotourism. In order to test the hypothesis, local communities were interviewed about the forest products they obtained freely from the forest reserve before the national park was established, and whether they still have access to the Park to collect the same products today.

The relationship between local communities and the Park was also sought by asking respondents why they think the park should be protected and whether they would still be willing to participate in managing the Park even after losing their rights of access and use of resources. The probability of sharing revenue from tourism suggested the hypothesis that local people do benefit from ecotourism in Kibale. This hypothesis was tested by seeking answers to the following questions: are local people aware of the ecotourism programme in KNP? Do they interact with tourists? In what ways do they benefit from ecotourism? Do they think that government extension services have improved in their areas following the introduction of ecotourism? The answers to all these questions were sought by conducting household interviews. To test the hypotheses empirically, all the parishes surrounding KNP were grouped into four strata and one parish from each strata was selected. The process of stratification and the interview procedure are described in the next section.

7.4 Survey Methodology

Introduction

Bright and Manfreda (1995) have observed that one of the best ways of learning about the human dimension of natural resource management is to assess the attitudes of the public toward the resource. There are several advantages of conducting an attitude survey. Firstly, it reveals information that enables resource managers to understand the diverse sides to issues relating to resource use and management. Secondly, information gathered helps in determining the extent to which the public would accept and support resource management activities. Thirdly, resource managers are able to identify and understand various resource user groups. Lastly, resource managers can design community education programmes to influence public attitudes and win support.

In this study, the direct interview method was used to collect information on local perception of conservation and attitudes towards ecotourism. The major advantage of the method is that it is flexible. For instance, the interviewer can ensure that the respondent fully understands the nature of the information being sought, and can probe more deeply into responses. In addition, the interviewer can establish a rapport with respondents thereby maintaining respondents' interests and participation. According to Burton (1971), direct interviews make it possible for interviewers to clarify meanings and the purpose of particular questions through prompting and emphasis. As a result, the interviewer can obtain more accurate information than would be forthcoming from self-administered surveys. The major shortcoming of the method is that the interviewer can establish over-rapport with respondent and possibly influence his/her decision.

In this section the methodology used to assess local perception of conservation and ecotourism in Kibale is described. Firstly, a synopsis of the survey design is given

followed by an account of how the questionnaire was developed. The choice of parishes surveyed and selection of sample size and sampling method are also presented.

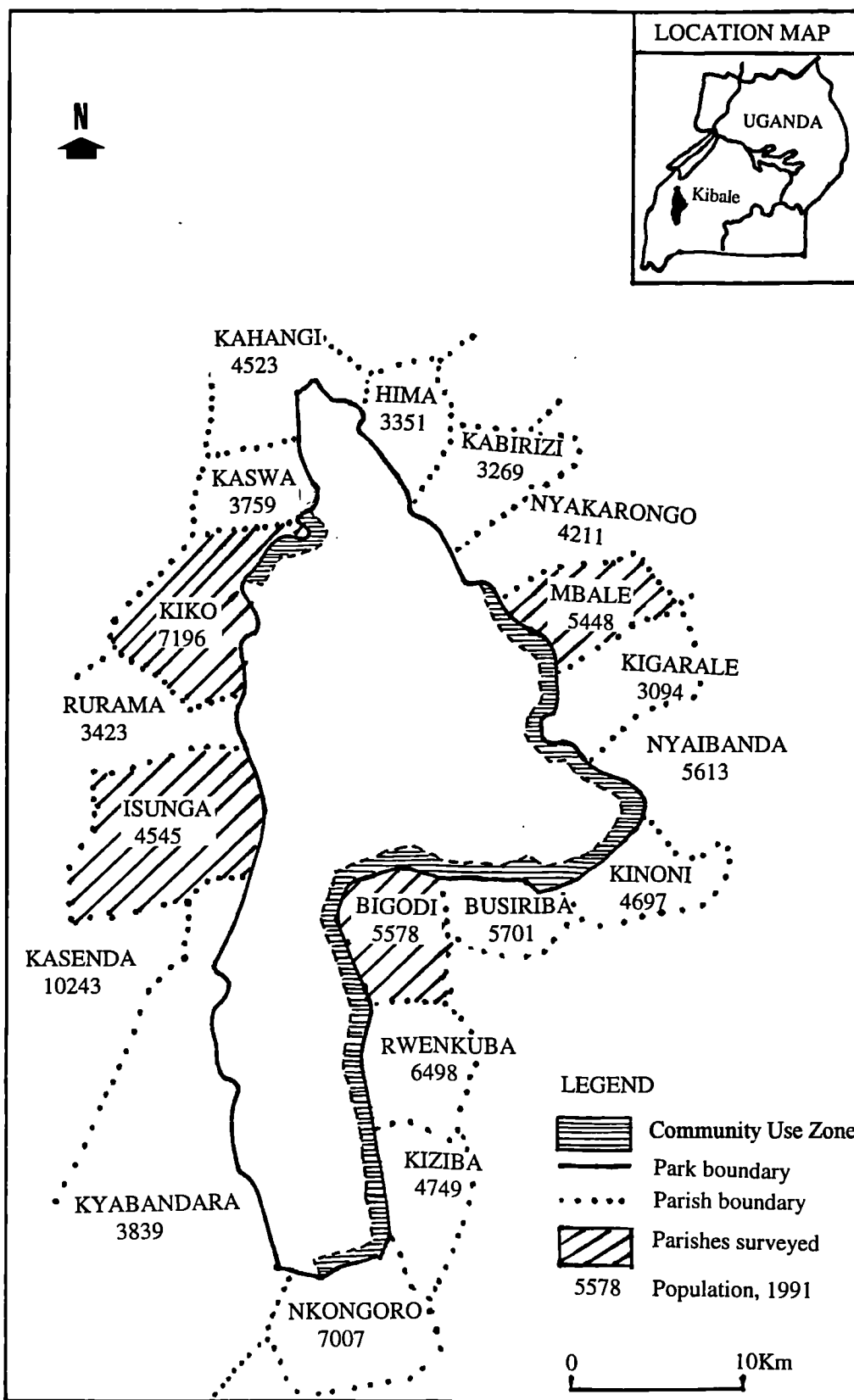
Survey Organisation

The primary purpose of the survey was to collect information on past and present uses of the Park's resources by local communities and their perception of conservation and ecotourism. It was inferred from Reid's (1993) report that local communities living within a range of approximately 5 km from the Park boundary were directly affecting or were affected by the Park. As a result, the study was confined to parishes directly bordering the Park (Fig. 7.1). The inability of the author to communicate in the local languages (Lutoro and Lukiga) and poor access to the villages were the main problems taken into account when planning the survey. To best meet the objectives of the study within these constraints, data were collected using interviewer administered structured questionnaires. A local person fluent in English as well as Lutoro and Lukiga was recruited as a field assistant. A local person was chosen because of the need to reduce suspicion among respondents. Interviews were conducted between October 1994 and June 1995.

Questionnaire Design

Questions were constructed in English, but during the interviews they were translated into Lutoro or Lukiga and answers were written again in English. The interview was divided into five sections. The first section explored respondents' demographic characteristics. Here, respondents were asked who the head of the household was, his/her occupation, number of children in the family and total number of people in the household. The second section focused on Park resource use. Respondents were asked to state where they obtained fire wood, building poles and sawn timber. In

Figure 7.1 Map of Kibale National Park and the parishes surrounding it



the third section, value of the Park was examined. The first question sought information on the source of bushmeat and type of animals and birds commonly hunted in the area. Several questions then followed dealing mainly with different types of forest products that local communities obtained freely from the forest reserve before it became a national park. They were further asked whether they still get the same products freely from the Park today. The last questions in this section were about existence of the Park. Respondents were asked if the Park was harmful to them in any way and whether they think wild animals should be protected.

Section four was concerned with Park conservation and management. Respondents were asked why they think the government decided to establish Kibale National Park. They were then asked if they had ever cultivated land in the Park. Those who answered "yes" were asked how they obtained the land, for example, whether by themselves or whether they were given the land by someone else. One question that was considered to be sensitive in this section sought people's opinions on families evicted from the Park a few years ago. Respondents were then asked to suggest what should be done with part of the Park that had been degraded by cultivation. The section concluded with questions on local communities' willingness to participate in the Park management activities. Respondents were asked whether they would participate in fire fighting, fire line maintenance, boundary maintenance, tree planting, maintaining paths and roads leading to the Park, and reporting illegal pit sawyers and charcoal burners.

The fifth section dealt with local perception of conservation and ecotourism in Kibale. Households were asked whether they interacted with tourists, for example, by giving assistance or doing some work for them. They were also asked whether they think they benefit from tourists, and if so in what ways, and whether they think tourists should be encouraged to come and visit their areas. The final question in this section sought information on improvement of government extension services. Respondents were asked

whether they think services such as agricultural extension, forest extension, health services, educational services and road maintenance had improved following the introduction of ecotourism in Kibale.

To make the translation of questions easy from English to Lutoro and Lukiga, efforts were made to keep the wordings of questions as simple as possible. A total of 40 questions were constructed and a draft questionnaire was prepared. After revision by the supervisor, the final version was produced and then piloted.

Stratification of Parishes and Selection of Study Areas

With the assistance of the Park wardens, parishes surrounding the Park were grouped into four strata. Stratification was based upon three main issues namely, problems of crop damage, evictions from the Park, and local peoples' interaction with tourists. The criteria used in the stratification are presented in Table 7.1. It is important to point out that the criteria were based on subjective judgements of the Park Wardens. As a result, terms such as high, several, moderate, regular, low, and few used in Table 7.1 are not supported by any numbers. Based on these criteria, and also considering the problem of poor access to very remote villages, the following parishes were selected from each strata:

1. **Bigodi:**

Moderate crop raiding, few families evicted, and high interaction with tourists.

2. **Isunga:**

High rate of crop raiding, several families evicted from the Park, and regular interaction with tourists.

3. **Kiko:**

High rate of crop raiding, few families evicted from the Park, and regular interaction with tourists.

4. Mbale:

Moderate crop raiding, no family evicted from the Park, and no interaction with tourists.

In these parishes, household interviews were conducted in villages that either directly bordered the Park or were very close to the Park boundary. Villages were selected with the assistance of parish and village leaders.

Selection of Sample Size and Sampling Procedure

Guidelines recommended by Nichols (1991) on selection of sample sizes were followed and a sample size of 200 was selected. According to Lipton and Moore (1972) and Moser and Kalton (1979) information generated in social surveys with a sample size of 200 is reliable and can be reasonably analysed. Fifty households were interviewed in each parish. A simple random/systematic sampling procedure was used (see de Vaus, 1985). In each parish, the first household was selected at random and then interviewed. Interviews then proceeded by selecting every second homestead encountered along foot paths leading to the villages.

Interview Administration

In selection of respondents, care was taken to ensure that female headed households were represented since women are believed to interact with the Park more than men (the village leaders felt so). Refusals were compensated by selecting the next household encountered. Call backs were avoided to save time. Only one person per household was interviewed. Where both husband and wife were present, the husband was interviewed. If the husband was away, the wife was interviewed instead. In some cases the oldest child (at least 18 years or older) in the family was interviewed, but only when both

parents were away, or were not in a position to be interviewed due to illness or were very old.

Interviews were conducted at home or in the crop fields where people were working. All interviews were conducted between 9.00 am and 3.00 pm because most people left their homes after lunch for drinking places. Every interview began with the introduction of the field assistant and the author to clear suspicion and put respondents at ease. The purpose of the interview was then explained and the head of the household asked if the interview could proceed. Each interview lasted about 45 minutes to one hour because of the translations which took much of the time. In some cases the respondents took a long time to understand the questions. Open-ended questions were recorded verbatim and subsequently coded. In every parish, local leaders were interviewed first. In Uganda, local leaders are people with good knowledge of local issues and are consulted on many matters as opinion leaders. In this study, they were expected to speak openly about problems of Park resource use and local community use rights which other people would have feared to talk about freely.

7.5 Field Reconnaissance and Pilot Survey

Field reconnaissance was carried out for three main reasons. Firstly, it was important to make contact with local leaders in each parish in order to explain the purpose of the study and to obtain permission to conduct the interviews. Secondly, it was necessary to consult the local leaders and select villages that were both accessible and nearest to the Park boundary. Thirdly, identification and hiring of accommodation for the field assistant was also necessary. This was done especially in Isunga and Mbale parishes because the field assistant could not travel from his house everyday to conduct the interviews.

The pilot survey was conducted in Bigodi with the aim of testing whether the

questionnaire was well designed, questions properly worded, and whether the questions could be easily translated from English to Lutoro and Lukiga. Twenty households were interviewed after which the following changes were made:

- (i) It was discovered that some members of the local community were not aware that Kibale Forest Reserve had become a National Park and got confused when the term National Park was used. As a result it was decided that the terms Forest Reserve and National Park should be used interchangeably in the main survey.
- (ii) It was noted that respondents repeated answers given to question 3.4 in question 3.5. The two questions were therefore merged into question 3.4 (see Appendix II). At the same time it was discovered that there were no bamboo stands in Kibale. Bamboo was deleted from the list of forest products in the questionnaire.
- (iii) Respondents did not understand how some animals in the Park could help to control numbers of others that could become pests. This was deleted from the questionnaire (see question 3.5d in Appendix II).
- (iv) Question 3.6 was deleted because it was poorly understood and respondents gave similar answers when asked question 3.8.
- (v) Question 4.1 was evaded by most people because of its open-ended nature. Many respondents insisted that the last time they ate bushmeat was more than ten years ago. This was obviously not true. The question was re-phrased to limit answers to not more than ten years.
- (vi) In section five, answers given to question 5.4, on the assistance respondents had given to tourists were repeated in question 5.5. As a result question 5.4 was deleted.

The pilot survey was successful and proved to be helpful in many ways. For example, it enabled flaws in the questionnaire design to be identified as a result of which many questions were modified. The wording and layout of the final questionnaire used in the main survey were also greatly improved.

7.6 Interview Response

The response rate was high (99.5%). This could have been influenced by the theme of the study which turned out to be very interesting to respondents especially as it focused on problems of Park resource use. There was only one refusal where a housewife declined to be interviewed because her husband was not around and she needed his permission before accepting to be interviewed.

7.7 Clerical Editing, Coding and Data Analysis

All the questionnaires were checked at the end of the day and local names of trees and wild animals recorded during the interviews were translated into common English names or scientific names. Answers to open-ended questions were grouped and then given numerical codes prior to computer analysis. Microsoft SPSS was used to summarise data into frequencies and Minitab was used for analysis of variance.

7.8 Limitations of the study

Like in other similar studies, the survey had some limitations.

1. Only 20 per cent of the parishes were surveyed. As a result, the findings reported here may provide only an indicative rather than a definitive account of Park resource use by local communities in Kibale.

2. Translations extended the length of interviews. In some cases interviews lasted about one hour. This resulted in two major problems. First, respondents lost concentration about mid-way through the interview and information given towards the end of the interview was in most cases not well thought out. Secondly, rapport was lost and respondents became suspicious of the purpose of the study. Others even questioned the detailed nature of the interview. Much time was lost in trying to re-explain the aims of the survey and re-establishing rapport. Under these circumstances, it was possible to conduct only five interviews per day. Translations presented additional set backs and it is likely that some details could have been lost in the process.
3. In nearly all the parishes, some answers were given merely to please us. However, as stated by Bright and Manfredo (1995), this is a common problem encountered in studies involving public opinion on natural resource use and policy. Some sensitive questions were answered not because respondents actually held attitudes, but simply because we asked for it.
4. Many respondents were not willing to reveal information about wild animals hunted for bushmeat in their areas probably because of restrictions imposed on hunting in the Park.
5. In Isunga, interviews were conducted at a time when the Park boundary was being re-surveyed and adjusted onto private lands. Tension was high and on many occasions respondents diverted interviews to discuss personal problems and conflicts with the Park over land. The interviews also attracted curious on-lookers who occasionally joined in giving chorus answers.

7.9 Survey Results

In this section, results of the survey are presented. In sub-section 7.9.1 the demographic characteristics of local communities living around KNP are given. Sub-sections 7.9.2 and 7.9.3, constitute the findings on Park resource use and Park value. In sub-section 7.9.4, local community opinions on Park conservation and management are summarised and in sub-section 7.9.5, local perception of ecotourism is presented.

7.9.1 Demographic characteristics

According to IUCN (1992b), detailed knowledge of people whose lives are affected by creation of national parks is vital for long term management of park resources. In this study, the survey sought information about the characteristics of local communities living around KNP because they were expected to benefit directly from conservation and ecotourism. As noted by Wells *et. al.* (1992), careful social analysis of local population in protected areas is important in the planning and management of ecotourism. The survey found that in Kibale, households had an average of six children and a total of about of nine persons (Table 7.2). Analysis of variance showed that there were significant variations in the total number of people per household ($F = 3.45$ and $P \leq 0.05$), but not in the number of children.

7.9.2 Park Resource Use: Forest Products Obtained by Local Communities

It has been reported by several authors that protected areas have great potential value for many non-consumptive uses and that sustainable utilisation of resources are key issues in the planning and management of such areas. In Kibale, there have been plans to allow local communities to use forest resources within the Park's community use zone, but the plans have not been fully implemented. According to Fox (1995), and

Goday and Bawa (1995), forest products are significant to rural economies and provide great economic value to local people. This study has shown that local communities in Kibale still depend on the Park for major forest products such as firewood, building poles and sawn timber.

Firewood

Table 7.3 shows percentage response by households to questions regarding firewood availability, source and use in the parishes surveyed. The results confirm an earlier observation that local communities still depend on the Park for firewood. Time taken to collect one headload of firewood, distance travelled and number of days one headload lasted a family, however, varied between the parishes (Table 7.4). On average, the households in Isunga spent more time (about 3 hours) and walked greater distances (about 2.5 km) to collect firewood than households in Bigodi, Kiko and Mbale.

Table 7.3 Percentage response by households to questions concerning firewood availability in the parishes surveyed (n=50 and N=200)

PARISH AND PERCENTAGE RESPONSE					
Firewood information	Bigodi	Isunga	Kiko	Mbale	Mean
Availability/Quantity					
Enough	78	98	56	56	72
Little	22	2	44	44	28
Source					
Own land	50	10	66	70	49
From the park	50	90	34	30	51

Table 7.4 Analysis of variance of time taken, distance walked, and number of days one headload of firewood lasts a household in Kibale (n=50 and N=200)

PARISH, MEANS OF RESPONSES AND ANOVA RESULTS							
Firewood information	Bigodi	Isunga	Kiko	Mbale	P.std	F	P
• Time taken to collect one headload (hours)	2.41	3.34	1.20	1.00	1.60	23.26	**
• Distance walked to collect one headload (km)	0.82	2.35	0.41	0.64	0.98	40.35	**
• Number of days one headload lasts	3.19	2.15	3.01	2.86	1.77	3.31	*

* Significant at $P \leq 0.05$

** Significant at $P \leq 0.01$

In Isunga, respondents claimed that one headload of firewood lasted two days whereas in Bigodi, Kiko and Mbale the same quantity lasted about three days. This finding can be challenged on two main grounds. Firstly, it is clear from Table 7.2 that the average number of people per household, for example, in Bigodi is higher than in Isunga. As would be expected, therefore, firewood consumption in Bigodi should have been higher than in Isunga. Secondly, a greater proportion of people in Isunga claimed that there was enough firewood in their areas, yet the majority (90%) said they obtained firewood from the Park (see Table 7.3). If this is true then the finding reported above that people in Isunga walk greater distances and take more time to collect one headload of firewood is not correct. These contradictions and inconsistencies render this aspect of the results invalid. On the other hand, it could be true that households in Bigodi, Kiko and Mbale parishes use firewood more economically because they obtain it from trees growing on their land unlike in Isunga where firewood is collected freely from the Park and people think the supply is unlimited.

Building Poles

More than half (62%) of all the households interviewed said they obtained building poles from the Park (Table 7.5). In Kiko and Mbale, about 50 per cent of the respondents said they obtained building poles from their own woodlots. In Isunga, the majority (90%) admitted that they get building poles from the Park. About 70 per cent of those who had planted trees claimed that they looked after them whereas 20 per cent said they left them to grow naturally. A small proportion (4.5%) did not have trees on their land and presumably obtained building poles from the Park.

When asked whether there were enough trees in their areas for building poles, 72.5 per cent answered "no". Many complained that scarcity of land impeded their efforts to plant trees. Others claimed that trees took up plenty of space on land and were reluctant to plant some. These answers suggest that tree planting programmes aimed at alleviating the problems of fuelwood and building poles, while at the same time relieving pressure on the Park for these products, should first consider the issue of land scarcity. Efforts could be directed towards exploring better ways of using firewood and finding alternatives to building poles, for example, by encouraging local communities to use energy efficient stoves to reduce the amount of firewood consumed and to construct houses using bricks and mud blocks. IUCN is already addressing some of these problems in the parishes around Kibale and additional support could focus on consolidating programmes already on the ground.

The interviews also revealed that it cost about Shs. 40 000 (approximately US\$ 40) to buy building poles to construct a house (Table 7.5). This perhaps explains why a large proportion (62.5%) of respondents said they obtained building poles from the Park. Since 80 per cent of the households indicated that they used eucalyptus from private woodlots for building poles (Table 7.6), then eucalyptus would be the species to

consider in a future tree planting programme because people are already familiar with its husbandry and use.

Table 7.5 Percentage response by households to question on the source, care, availability, and cost of building poles in Kibale (n=50 and N=200).

PARISH AND PERCENTAGE RESPONSE					
Building pole information	Bigodi	Isunga	Kiko	Mbale	Mean
Source					
Private land	38	10	52	52	38.0
The park	62	90	48	48	62.0
Tree care					
Trees in gardens tended	78	62	64	86	75.2
Trees left to grow on their own	18	26	34	14	23.0
No tree on land	4	12	2	0	4.5
Availability/Quantity					
Enough	18	10	52	30	27.5
Little	82	90	48	70	72.5
Cost					
Average cost of poles enough for one house (Ug. Shs x 1000)	60	38	29	28	38.8

Table 7.6 Percentage response by households to question on tree species being used for building poles.(n=50 and N=200). Values in parentheses are the means of percentage response by those not using the species.

PARISH AND PERCENTAGE RESPONSE					
Tree species	Bigodi	Isunga	Kiko	Mbale	Mean
<i>Albizia spp</i>	4	0	2	10	4.0(96.0)
<i>Blighia spp</i>	4	4	0	6	3.5(96.5)
<i>Bridelia micrantha</i>	26	22	30	40	29.5(71.5)
<i>Chrysophyllum albidum</i>	2	0	2	0	1.0(99.0)
<i>Croton spp</i>	0	2	0	0	0.5(99.5)
<i>Dasylepis spp</i>	2	0	0	0	0.5(99.5)
<i>Diospyros abyssinica</i>	16	24	0	0	10.0(90.0)
<i>Eucalyptus</i>	80	86	88	64	67.5(37.5)
<i>Fagara spp</i>	0	0	0	6	1.5(98.5)
<i>Funtumia africana</i>	0	2	0	6	2.0(98.0)
<i>Harrisonia abyssinica</i>	4	4	0	0	2.0(98.0)
<i>Macaranga spp</i>	0	0	6	0	1.5(98.5)
<i>Maesopsis eminii</i>	0	2	0	0	0.5(99.5)
<i>Markhamia lutea</i>	10	84	20	40	38.5(61.5)
<i>Millettia dura</i>	16	8	4	42	17.5(82.5)
<i>Phoenix reclinata</i>	60	18	0	0	19.5(81.5)
<i>Rothmannia spp</i>	0	6	0	0	1.5(98.5)
<i>Sapium ellipticum</i>	2	6	0	6	3.5(96.5)
<i>Senna spectabilis</i>	26	38	0	18	20.5(79.5)
<i>Tabernaemontana spp</i>	2	0	0	0	0.5(99.5)
<i>Teclea nobilis</i>	10	6	0	0	4.0(96.0)
<i>Turraea floribunda</i>	8	0	0	0	2.0(98.0)
<i>Uvariopsis congensis</i>	6	6	0	0	3.0(97.0)

Of the 23 species mentioned as suitable for building poles, *Milletia dura*, *Bridelia micrantha*, *Phoenix reclinata*, *Diospyros abyssinica*, and *Teclea nobilis* were the most favoured (Table 7.6). In this respect, when implementing the proposed collaborative park management and resource use programme, it would be appropriate to assess the stocking density of these species because the majority said they use them and therefore may become over-exploited.

Sawn Timber

About 50 per cent of the households said they bought sawn timber from licensed pit sawyers and from local carpenters. A very small proportion (2%) claimed that they obtained timber from trees growing on their land (Table 7.7). Most respondents denied felling trees in the park to saw timber, yet in many homes we visited, there were planks of timber newly sawn from, probably, *Olea welwitschii*, *Lovoa swynertonii*, and *Entandrophragma spp.*

Table 7.7 Sources of sawn timber stated by households during the interviews. Values in parentheses are the means of percentage response by those who denied obtaining sawn timber from the park (n=50 and N=200).

PARISH AND PERCENTAGE RESPONSE					
Source of sawn timber	Bigodi	Isunga	Kiko	Mbale	Mean(%)
Local carpentry workshops	52	62	50	26	47.5(52.5)
Licensed pit sawyers	48	36	50	68	50.5(49.5)
From trees growing on own land	0	2	0	6	2.0(98.0)

The tree species mentioned above had earlier been reported by Howard (1991) as endangered in Kibale. More information about them were revealed when households were asked to mention types of forest trees they felt were most suitable for sawn timber.

About two thirds mentioned *Lovoa* and *Entandrophragma spp* (Table 7.8).

Table 7.8 Tree species mentioned by households as suitable for sawn timber. Values in parentheses are the means of "no idea" responses (n=50 and N=200).

Species	PARISH AND PERCENTAGE RESPONSE				
	Bigodi	Isunga	Kiko	Mbale	Mean
<i>Albizia spp</i>	10	0	0	2	3.0(97.0)
<i>Blighia spp</i>	8	8	0	0	4.0(96.0)
<i>Bridelia micrantha</i>	0	2	0	0	0.5(99.5)
<i>Chrysophyllum albidum</i>	0	0	2	0	0.5(99.5)
<i>Cordia millenii</i>	58	58	4	60	45.0(55.0)
<i>Entandrophragma spp</i>	54	40	20	18	33.0(67.0)
<i>Fagara spp</i>	2	14	14	30	15.0(85.0)
<i>Ficus spp</i>	3	0	0	0	0.75(99.25)
<i>Funtumia africana</i>	8	12	0	24	11.0(89.0)
<i>Lovoa swynnertonii</i>	62	12	50	0	31.0(69.0)
<i>Milicia excelsa</i>	8	10	10	0	7.0(93.0)
<i>Millettia dura</i>	0	0	2	0	0.5(99.5)
<i>Mitragyna rubrostipulata</i>	0	8	2	0	2.5(97.5)
<i>Morus lactea</i>	2	2	0	0	1.0(99.0)
<i>Newtonia buchananii</i>	6	4	4	0	3.5(96.5)
<i>Olea welwitschii</i>	4	80	30	4	20.5(79.5)
<i>Piptadeniastrum africanum</i>	22	2	0	0	6.0(94.0)
<i>Polyscias fulva</i>	2	2	0	22	6.5(93.5)
<i>Premna angolensis</i>	2	4	0	0	1.5(98.5)
<i>Pseudospondias microcarpa</i>	14	12	0	0	6.5(93.5)
<i>Sapium ellipticum</i>	0	0	2	0	0.5(99.5)
<i>Strombosia scheffleri</i>	0	0	2	0	0.5(99.5)
<i>Symphonia globulifera</i>	0	2	2	0	1.0(99.0)

About one third said they had no idea. There were several species mentioned by very few people (see Table 7.8 above) implying that they could have been guessed. On the

other hand, it may be argued that local people actually felled and sawed timber from the species, except many feared to be identified with illegal pitsawing.

7.9.3 Value of the Park Resources

Hunting and Trapping of Animals

Hunting of wild animals for bushmeat is a common cultural activity in Uganda done primarily for subsistence. Various techniques are used for trapping and killing animals, for example, pitfalls. It was learnt during the interviews that animals commonly hunted for bushmeat were bush pigs (*Potamochoerus porcus*), bush buck (*Tragelaphus scriptus*), red duiker (*Cephalophus harveyi*), sitatunga (*Tragelaphus spekeii*), giant forest hog (*Hylochoerus meinertzhageni*), and buffalo (*Syncerus caffer nanus*) (Fig 7.2a). Birds commonly hunted were guinea fowl (*Guttera edouardi*), francolin (*Francolinus spp*), and red dove (*Columba spp*) (Fig. 7.2b).

Some respondents declined to answer when asked when they last ate bushmeat. However, analysis of variance shows that there were no significant variations in the number of years given by respondents in the four parishes ($F = 1.37$ and $P \leq 0.05$). In Bigodi, the average number of years was 14 whereas in Isunga it was 12. In Kiko and Mbale parishes, it was 10 and 11 years respectively.

Harvesting of Non-Wood Products

Before Kibale Forest Reserve was made a Forest Park and then a National Park, local communities obtained forest products freely despite restrictions by the Forest Department. Many respondents claimed that the forest administration at the time allowed them to collect firewood and building poles from the forest reserve and that their

Figure 7.2 (a)
Animals hunted for bushmeat

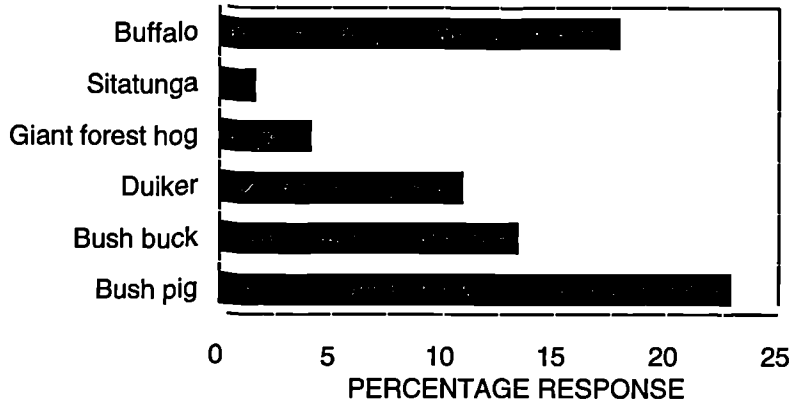


Figure 7.2 (b)
Birds commonly hunted for meat

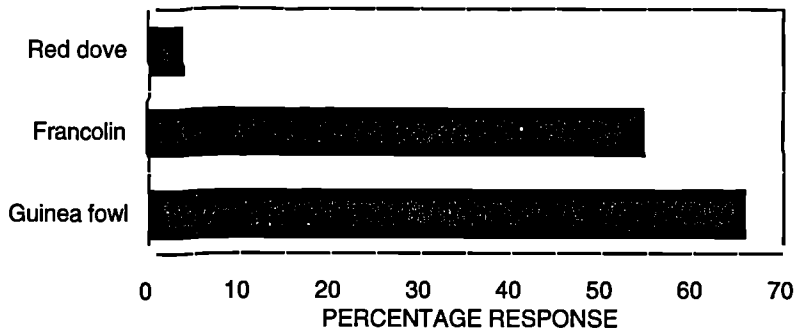


Figure 7.2 Wild animals and birds commonly hunted in Kibale for bushmeat.

traditional use rights were respected. From the discussions held during the interviews, it became clear that traditional use rights were lost after the Forest Reserve became a Forest Park. Forest products that local communities used to harvest freely from the forest reserve are presented in Table 7.9. Despite strict Park rules and regulations on resource use today, many respondents admitted that they still obtain the same products from the Park. Non-wood products such as water, clay, grass, and papyrus have less restrictions on them. Several households in Isunga, for instance, said that they still collect drinking water from the Park.

Other Activities

Apart from harvesting forest products, local communities also used the Park for grazing livestock, cultivation and passage to neighbouring localities. The majority of those who cultivated land in the forest claimed that they were given plots by the Forest Department to plant trees and grow agricultural crops. More than 70 per cent of the households in Isunga admitted that they cultivated plots in the forest and grazed livestock as well. Nearly one half said they hunted wild animals freely. In Bigodi and Isunga, about one third said they fished in the rivers and streams that drain parts of the Park. About half of all the households said they used the Park as a passage to neighbouring localities (Table 7.9)

Table 7.9 Percentage response by households to question on forest products obtained freely and other ways in which the forest reserve was used by local communities before it became a national park (n=50 and N=200).

PARISH AND PERCENTAGE RESPONSE					
Forest Use	Bigodi	Isunga	Kiko	Mbale	Mean
Forest products harvested					
Honey	68	86	26	70	62.5
Mushrooms	88	10	36	76	75.0
Fruits	70	68	20	74	58.0
Vegetables	46	70	12	22	37.5
Medicines	86	96	22	74	69.5
Ropes and craft materials	48	4	26	0	19.5
Water	8	14	0	0	5.5
Papyrus	0	18	6	0	6.0
Clay	0	4	0	0	1.0
Grass (thatch)	8	22	2	0	8.0
<i>Cultivation</i>	36	72	16	6	32.5
Fishing	32	36	0	0	17.0
Hunting	34	50	4	62	37.5
Grazing	0	70	18	0	22.0
<i>Passage to neighbouring localities</i>	84	86	38	2	52.5

Impact of Wild Animals

Crop damage by wildlife on agricultural lands adjacent to protected areas has been documented by IUCN (1992). At the same time, Nepal and Weber (1995) have examined how wildlife damage to property on surrounding farmlands is a potential source of conflict between local inhabitants and protected areas. Local people in Kibale

reported that crops were damaged mainly by elephants (*Loxodonta africana*), bush pigs (*P. porcus*), baboons (*P. amubis*) and monkeys. Nearly all respondents (97%) said crop damage was the most serious wildlife problem (Table 7.10). Thirty eight per cent claimed that wild animals also transmitted some diseases to human beings and livestock. They said buffaloes (*S. caffer*) carried tsetse flies on their bodies and the flies affected both human beings and livestock (presumably caused sleeping sickness in humans and nagana in livestock). They also claimed that baboons (*P. amubis*) and colobus monkeys (*Colobus spp*) carried some unknown fly that bit human beings and caused skin irritation. Others alleged that monkeys carried ticks that affected goats and sheep as well. Other wild animals mentioned were the mongoose and pythons that killed poultry and young goats. About 50 per cent alleged that the red colobus monkey (*C. badius tephrosceles*) teased women and attacked children.

There were some positive impacts of wildlife reported. Apart from bushmeat, about 50 per cent of the households said they also obtained medicines and skins for making drums. For example, there were claims that extracts from intestines of bush pig (*P. porcus*) were used as medicine for treatment of different types of abdominal problems.

Table 7.10 Percentage response by households to questions on impact of wild animals on the local communities living around KNP (n=50 and N=200).

PARISH AND PERCENTAGE RESPONSE					
Impact of wild animals	Bigodi	Isunga	Kiko	Mbale	Mean
Positive impact					
Source of bushmeat	96	80	80	98	88.5
Source of skins	74	54	30	94	63.0
Source of medicines	68	40	48	52	52.0
Negative impacts					
Transmission of diseases	32	48	22	50	38.0
Crop damage	98	98	92	10	97.0
Killing of livestock	86	86	32	94	74.5
<i>Attacking people</i>	54	74	2	70	50.0

Wildlife Protection

Opinions differed on the importance of protecting wild animals. When asked whether wild animals should be protected, 19.5 per cent answered "no". The reason they gave was that animals would increase in number and become more destructive. About two thirds said wild animals should be protected and 13 per cent had no idea. After probing, two reasons were given for the "yes" answer. The first was that protection of wild animals in the Park would support tourism. The second was that future generations would also be able to see and benefit from the animals. These reasons suggest that there are people around KNP who support conservation of wildlife. Local perception that wildlife should be protected for the benefit of future generation agrees with IUCN's (1980) definition of conservation given at the time of launching "World Conservation Strategy". Conservation was defined as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while

maintaining its potential to meet the needs and aspirations of future generations".

7.9.4 Park Conservation and Management

Park Conservation

The level of local community awareness of Park existence was ascertained by asking respondents why they think the government decided to establish Kibale National Park. About one third (28.5%) gave answers which suggested that it was aimed at protecting wildlife. Almost as many (27.5%) said the government wanted to develop tourism in Kibale, and about 25 per cent had no idea. At the same time 19.5 per cent said the forest was important because it attracted rainfall. Thus, although a great majority seemed to have been aware about the existence of the Park, and presumably understood its importance, a substantial proportion had only a vague idea.

Knowledge about Park conservation was even more deficient than awareness of park existence. In an attempt to understand whether local communities knew the importance of wildlife conservation, respondents were further asked whether it would be reasonable to destroy trees and wild animals in the Park. The majority (89%) said it would not be right whilst 11 per cent said there would be more land for settlement and cultivation. The latter answer may be cynical but it shows the attitude held by a minority and which needs to be taken seriously because it raises two issues of concern. Firstly, it shows that there are people in Kibale who are ignorant about the value of the Park. Secondly, it reveals the inefficiency of KNP's community outreach programme. The ignorance poses a serious danger to conservation of the Park and its resources. It also indicates that some difficulties would be met when implementing the proposed collaborative Park management programme. In Isunga parish, where land scarcity and eviction of families from the Park have resulted in negative attitudes towards the Park, it

is likely that the programme would be resented.

Other problems likely to arise are uncontrolled exploitation of the Park's resources and inability of local communities to transmit knowledge about the Park to future generations. In the long run the importance that local communities attach to the Park will diminish and conservation of resources will be neglected. It can be assumed at this juncture that a combination of ignorance about the Park's value and the problem of land scarcity culminated in the decision by some people to cultivate land in the Park a few years ago. In Isunga, 66 per cent of households said they settled and lived in the Park (Table 7.11). They could have done so because they never saw any value in the Park. Of these, 26 per cent said they obtained land by themselves while 40 per cent claimed that land was allocated to them by other people.

Table 7.11 Percentage of households who admitted/denied cultivating land in the park and how they obtained it (n=50 and N=200).

PARISH AND PERCENTAGE RESPONSE					
Response	Bigodi	Isunga	Kiko	Mbale	Mean
Obtained land myself	8	26	6	1	12.5
Land was allocated by someone else	20	40	26	0	21.5
Never cultivated land in the park	72	34	68	90	66.0

Opinions on Evictions from the Park

Respondents were asked to agree or disagree with a number of statements designed to reflect general opinions of local communities about evictions carried out a few years ago in the Park. Responses suggest that local communities supported the evictions except in Isunga parish where more than 70 per cent of the households opposed it (Table 7.12). People in Isunga felt that the evicted families should have been

allowed to settle and cultivate specially designated parts of the Park. Others suggested that the families should have been allocated plots in specified areas of the Park and allowed to cultivate with special permits.

Households in Bigodi parish had a different view. More than 80 per cent supported the evictions and opposed the idea of allowing people to settle in the Park. The divergence in opinion here could be due to the ethnic differences of local communities living around KNP. In Isunga, households are predominantly the Bakiga who migrated from south-western Uganda whereas in Bigodi, households are mainly the Batoro. The majority of the Batoro blame the Bakiga for causing the present land scarcity and conflicts with the Park authority. In Kiko and Mbale parishes, about half of the respondents supported the evictions. However, some people supported the idea that the evicted families should have been allowed to cultivate specified areas of the Park with special permits. Analysis of variance confirmed the differences in opinions (Table 7.13).

Table 7.12 Opinions of households on evictions from the park. Values in parentheses are percentage response by those who "Disagreed" with the statements (N=200).

Statements	PARISH AND PERCENTAGE RESPONSE				
	Bigodi	Isunga	Kiko	Mbale	Mean
Evicted families should have been allowed:					
• to cultivate freely in the park	18(82)	68(32)	32(68)	36(64)	38.5(61.5)
• to build and settle in the park	8(92)	26(74)	30(70)	28(72)	23(77)
• to cultivate specified areas with permit	38(62)	82(18)	52(48)	60(40)	58(42)
• evicted all the same	70(30)	28(72)	54(46)	56(44)	52(48)

Table 7.13 Analysis of variance of opinions on evictions from the park. Values in parentheses are means of responses where Agree=1, Disagree=2, and Don't know=0 (n=50 and N=200).

PARISH, MEANS OF RESPONSES AND ANOVA RESULTS							
Statements	Bigodi	Isunga	Kiko	Mbale	P.std	F	P
Evicted families should have been allowed:							
• to cultivate freely in the park	1.82	1.30	1.66	1.64	0.46	11.54	**
• to build and settle in the park	1.92	1.74	1.76	1.72	0.42	2.97	*
• to cultivate specified areas with special permits	1.62	1.16	1.50	1.40	0.47	8.69	**
• evicted all the same	1.70	1.72	1.44	1.44	0.48	5.28	**

* = Significant at $P \leq 0.05$

** Significant at $P \leq 0.01$

Management of Park Areas Degraded by Cultivation

Suggestions were sought from local communities about what should be done with areas of the Park cultivated in the past. A series of statements were again read and respondents were asked to agree or disagree with them. About 65 per cent disagreed with the idea of degazetting part of the Park. Those who supported it suggested that parts of the grassland areas to the east of the Park should be degazetted for settlement (Table 7.14). In Bigodi, 96 per cent of the households rejected the idea. There were surprising responses in Isunga. Despite having the highest number of households evicted from the Park, only 34 per cent supported degazetting part of the Park. Nearly 80 per cent said the plots cultivated in the past should be planted with indigenous trees and a further one third proposed the taungya system where trees would be grown alongside agricultural crops. They also agreed with a suggestion about planting trees while temporarily growing agricultural crops.

About half disagreed with the idea of leaving the degraded plots to natural regeneration. It is likely that respondents never really understood what "natural regeneration" meant and the translation could have been ambiguous. Apparently they could not distinguish between natural regeneration and planting of indigenous trees as both refer to maintaining natural vegetation cover. Those who favoured re-forestation with indigenous trees said that natural regeneration would delay quick establishment of tree cover and return of wild animals.

Analysis of variance (Table 7.15) shows that there were significant differences in opinions about what should be done with parts of the Park degraded by cultivation. As stated earlier, public opinions are essential for successful implementation of policies regarding natural resource use and management. The different opinions expressed here may have important policy implications for future management of KNP because they indicate that local communities may react differently to new management interventions.

Table 7.14 Percentage response to statements on what should be done with cultivated plots in the park. Values in parentheses are percentages of response by those who disagreed with the statements (n=50 and N=200).

Statements	PARISH AND PERCENTAGE RESPONSE				
	Bigodi	Isunga	Kiko	Mbale	Mean
• Degazette part of the park	4(96)	34(66)	44(56)	58(42)	35(65)
• Replant cultivated plots with indigenous trees	76(24)	58(42)	90(10)	88(12)	78(22)
• Introduce taungya system	48(52)	96(4)	64(36)	58(42)	66.5(33.5)
• Leave the plots to natural regeneration	38(62)	24(76)	34(66)	94(6)	47.5(52.5)

Table 7.15 Analysis of variance of opinions on what should be done with the cultivated plots in the park. Values are means of responses where Agreed=1, Disagreed=2, and Don't know=0 (n=50 and N=200).

PARISH, MEANS OF RESPONSE AND ANOVA RESULTS							
Statements	Bigodi	Isunga	Kiko	Mbale	P.std	F	P
• Degazette part of the park	1.96	1.66	1.78	1.42	0.42	14.3	**
• Replant cultivated plots with indigenous trees	1.24	1.42	1.10	1.12	0.40	6.81	*
• Introduce taungya system	1.52	1.04	1.36	1.42	0.44	11.07	**
• Leave the area to natural regeneration	1.02	1.76	1.66	1.06	0.35	61.53	**

* Significant at $P \leq 0.05$ ** Significant at $P \leq 0.01$

Participation in Park Management

In order to assess whether local communities were willing to participate in Park management, respondents were asked to indicate from a list of six activities the ones they would be willing to participate in. A strong majority said they were willing to participate in all activities namely, planting trees in the Park (92.5%), clearing fire lines (91%), clearing Park boundaries (89%), fighting fires (88.5%), maintaining the roads and foot paths leading to the Park (87%), and reporting illegal pit sawyers and charcoal burners (95%) (Table 7.16).

Table 7.16 Park management activities local communities said they would be willing to participate in. Values in parentheses are percentages of those not willing to participate in the activities (n=50 and N=200).

Activities	PARISH AND PERCENTAGE RESPONSE				
	Bigodi	Isunga	Kiko	Mbale	Mean
• Planting more trees in the park	98(2)	94(6)	90(10)	88(12)	92.5(7.5)
• Clearing fire lines	92(8)	92(8)	98(2)	82(18)	91(9)
• Maintaining roads and foot paths leading to the park	88(12)	92(8)	90(10)	78(22)	87(13)
• Reporting illegal pit sawyers and charcoal burners	98(2)	98(2)	96(4)	88(12)	95(5)
• Clearing the park boundaries	92(8)	90(10)	94(6)	80(20)	89(11)
• Fighting fires	88(12)	94(6)	96(4)	76(24)	88.5(11.5)

Some dissenting minority views were also noted. For example, 13 per cent said they would not participate in maintaining roads and footpaths leading to the Park because they felt it would facilitate movement of illegal park users. Some said they would participate in all the activities, but only if the Park paid them. They argued that the Park collects revenue from tourists and therefore part of the money should be paid to them if they did any work. They singled out fire fighting which they claimed was a dangerous type of work that must be paid for. There were, therefore, significant variations (Table 7.17) in people's willingness to participate in the activities.

Table 7.17 Analysis of variance of local communities' willingness to participate in park management activities. Values are the means of responses where Willing=1, Not willing=2 and Don't know=0 (n=50 and N=200).

PARISH, MEANS OF RESPONSES AND ANOVA RESULTS							
Activities	Bigodi	Isunga	Kiko	Mbale	P.std	F	P
• Planting more trees in the park	1.02	1.06	1.10	1.12	0.26	1.42	**
• Clearing fire lines	1.12	1.08	1.10	1.22	0.34	1.72	**
• Maintaining roads and foot paths leading to the park	1.02	1.02	1.04	1.12	0.22	2.43	ns
• Reporting poachers, illegal pit sawyers and charcoal burners	1.08	1.06	1.06	1.20	0.30	2.57	ns
• Clearing park boundaries	1.12	1.06	1.04	1.24	0.31	4.15	**
• Fighting fires	1.08	1.08	1.04	1.18	0.29	2.10	ns

* Significant at $P \leq 0.05$ ** Significant at $P \leq 0.01$

ns = not significant

7.9.5 Local Perception of Ecotourism

Introduction

Bramwell (1993) and Lane (1993) have given an account of recent trends in development of rural tourism. They noted that community oriented tourism can be used as a tool for economic development and that it can help local communities to diversify their economic activities. According to IUCN (1992b), community-oriented tourism is one way of developing good working relationships between protected areas and local communities. Careful planning, however, is needed to avoid negative effects of tourism on local communities. Reports by Mackinnon *et. al* (1986) suggest that tourism development in and around protected areas brings economic benefits to remote areas by providing local employment, stimulating local markets, and improving transport and communication infrastructures. In this study, an attempt was made to establish whether local communities living around KNP are aware of the tourism programme and whether they interact with tourists. In addition, information was sought on the ways in which

they benefited from ecotourism and whether they think tourists should be encouraged to come and visit their areas. The findings are presented below.

Awareness about Ecotourism

The survey found that local communities were aware of ecotourism in Kibale and had favourable attitudes towards it. However, only 45 per cent admitted that they had seen tourists visiting their areas. More than 90 per cent of the households said tourists should be encouraged to come and visit the Park and their areas. Many could not comment on a number of issues. For instance, several people had no idea about what *would happen if the number of tourists increased*. In Mbale parish, those who claimed that they saw tourists visiting their areas could not explain what they came to do. This suggests that some of the answers given were just imagination. In Bigodi, all (100%) respondents said they had seen tourists but when asked further whether they interacted with them, only 32 per cent answered "yes".

Households in Isunga had a different view about tourism. They attributed their evictions from the Park to tourism development in Kibale. But when asked whether tourists should be encouraged to visit their area, the majority (84%), surprisingly, answered "yes" (Table 7.18). They felt that tourism would stimulate development in their area. Many people in Mbale parish (86%) never saw tourists visiting their areas nor passing through to visit the Park. This was expected because Mbale is located in a remote part of Kibale and far away from the tourist centre. It is therefore true that many of them had indeed not seen tourists. Nevertheless, more than 90 per cent said tourists should be encouraged to visit their areas. They were aware of local community projects in Bigodi parish being funded by KAFRED (Kibale Association For Rural and Environmental Development), a local NGO involved in tourism activities. Many people in Mbale expressed the desire to form a similar body in their parish.

Interaction with Tourists

Most respondents, except in Mbale, said they had interacted with tourists. In Bigodi, about one third said they had done some work or assisted tourists. Close proximity to the tourist centre (about 5 km away) gives Bigodi a great advantage over other parishes in terms of benefits from tourism. Current tourism activities in the parish tend to be an extension of visits to the Park. At the same time, the formation of KAFRED is largely attributed to the development of ecotourism in Kibale. Since its inception, KAFRED has established visitor facilities for activities such as swamp walk, bird viewing etc. and uses revenue collected to support local development projects in the parish.

Table 7.18 Awareness about ecotourism, interaction with tourists and local perception of ecotourism development in Kibale (N=200).

PARISH AND PERCENTAGE RESPONSE					
Questions and Responses	Bigodi	Isunga	Kiko	Mbale	Mean
<i>Do you see tourists coming to this area?</i>					
• Yes	100	48	42	14	51.0
• No	0	52	58	86	49.0
<i>Have you ever done any work or given assistance to a tourist?</i>					
• Yes	32	12	4	0	12.0
• No	68	88	96	100	88.0
<i>Do you think tourists should be encouraged to come and visit your area?</i>					
• Yes	98	84	100	92	93.5
• No	2	16	0	8	6.5

Benefits from Ecotourism

In all the parishes, responses varied over benefits local communities obtained from tourism. About one tenth claimed that they were employed in the past to do some work in connection with tourism (Table 7.19). A further one third said they benefited by selling local produce (e.g. fruits, eggs, chicken, etc) to tourists. There were different opinions about improvement of government services following the introduction of ecotourism in Kibale (Table 7.20). The majority felt that services such as agricultural extension, forest extension, road maintenance, health services, and educational services had improved since ecotourism was introduced.

These views need to be carefully interpreted because several NGOs have been operating in the parishes and educating people about environmental protection and tree planting. *IUCN in particular has been implementing tree planting programmes in the parishes under the Integrated Conservation and Development Project (ICDP) in Kibale (F. Sibö, 1995 - personal communication.)*. Therefore, respondents could have mistaken some of IUCN's tree planting activities as part of government effort to improve forest extension services in their areas.

About half of respondents felt that road maintenance had improved. Again, these answers may not be correct because the introduction of ecotourism in Kibale coincided with the rehabilitation of the Kampala - Fort Portal road. In Kiko, 86 per cent said the roads were much better today. Here, again, respondents could have been influenced by the road works that passed close to the parish. KAFRED's efforts to put up a secondary school using revenue generated from local tourism activities is the only practical example of improvement in educational services following the introduction of ecotourism in Kibale. It should be noted, however, that the new secondary school being built in Bigodi by KAFRED is purely a local initiative without government assistance. Only one third of

all respondents thought that health and agricultural/livestock services had improved.

Table 7.19 Percentage response to questions about the benefits local communities obtained from ecotourism (n=50 and N=200).

Question	PARISH AND PERCENTAGE RESPONSE				
	Bigodi	Isunga	Kiko	Mbale	Mean
<i>Have you ever been employed by KNP to do any work connected with tourism in the park?</i>					
• Yes	8	14	6	4	11.0
• No	92	86	94	96	92.0
<i>Do you benefit from tourists?</i>					
• Yes	40	40	66	4	37.5
• No	60	60	34	96	62.5
<i>Do tourists buy any of your local produce?</i>					
• Yes	46	46	10	0	25.5
• No	54	64	90	100	54.5
<i>Which of the following government services do you think has improved since the introduction of tourism at Kibale?</i>					
• Agricultural/Livestock extension	46	22	34	18	30.0
• Forest extension	84	90	88	20	70.5
• Road maintenance	70	32	86	22	52.5
• Health services	50	22	24	12	27.0
• Educational services	74	32	13	12	32.5

Table 7.20 Analysis of variance of local communities' opinions on extension services they think have improved because of ecotourism development in Kibale. Values are means of responses where Yes=1, No=2 and Don't know=0 (N=200).

PARISH, MEANS OF RESPONSE AND ANOVA RESULTS							
Extension service	Bigodi	Isunga	Kiko	Mbale	P.std	F	P
Agricultural/Livestock extension	1.54	1.78	1.66	1.82	0.45	3.96	**
Forest extension	1.16	1.16	1.12	1.80	0.35	45.59	***
Road maintenance	1.30	1.68	1.14	1.78	0.43	25.30	***
Health services	1.50	1.78	1.76	1.88	0.43	7.26	**
Educational services	1.26	1.68	1.74	1.88	0.43	19.71	***

** Significant at $P \leq 0.01$ *** Significant at $P \leq 0.001$

7.10 Conclusions

This study has found that local communities living around KNP still obtain most of their forest products from the Park and, harvesting of firewood and building poles are the most common. Fuelwood problem in Uganda is well documented (see e.g Spears, 1983; and World Bank, 1986) and firewood scarcity in Kibale is a problem common to other parts of the country. Going by the findings presented in this chapter, it can be concluded that continued dependence on the Park by local communities for firewood and other forest products will remain a management problem. The Park managers need to find ways of ensuring that exploitation of forest resources does not conflict with the goals of conservation and ecotourism. As stated by Wyatt-Smith (1987), exploitation of forest resources is culturally and economically important to local people living near protected areas, but local community use of the Park resources needs to be well planned so that resources are not over-exploited and biodiversity destroyed.

It is also clear from the findings that local communities living around KNP have lost their traditional forest use rights following the establishment of the Park and development of ecotourism. Pressure on the Park's resources is still real, although many denied harvesting forest products. Illegal pit sawing and hunting are the other problems that KNP managers need to examine as they will undermine current conservation efforts. Over time, however, harvesting of non-wood products may decline due to strict Park law enforcement and also as local communities become educated about alternative products and materials that can be used instead of wood. Similar observations were made by Tricontinental Development Consultants (TDC) in 1992. In their report on the socio-economic performance of tourism in Kibale, they noted that subsistence and commercial off take of forest products had declined since 1992 following the establishment of the Forest Park. They further pointed out that a combination of stricter Park law enforcement and extended community education had reduced overall communal dependency from 70 per cent in 1990 to 58 per cent in 1992.

However, ignorance by local communities about the importance of the Park's conservation objectives remains a matter of concern. Although some households supported protection of wildlife for tourism and for the benefit of future generations, a great majority had a very poor idea about the Park's value. Many people knew about the Park only in terms of attracting rain. Environmental education should therefore be stepped up and the significance of conservation emphasised. There is a need to make local people appreciate that the Park and its resources belong to them and that it is being protected for their own benefit. This message can best be conveyed to the people by the Park managers themselves. The present community outreach programme and the Park Management Advisory Committee (PMAC) are appropriate channels that can be used to educate local communities about the values of Park conservation.

Despite the eviction of some families from the Park a few years ago, local communities still support ecotourism development in Kibale. They perceive ecotourism as a symbol of development. The support, however, may decline due to frustrations created by constant crop damage by wild animals. At the moment, crop damage by wildlife is the biggest problem faced by local communities. Compensation for crop damage is an option that Park managers could explore if local support is to be maintained. Several publications (see e.g IUCN, 1984) indicate that in many protected areas compensation for crop damage helps to maintain a favourable community attitude towards wildlife conservation. Sherman and Dixon (1991) share the same view. They noted that crop damage is the cost conservation passes onto local communities and therefore must be compensated. Seen in this light, it can be said that the manner in which the problems of crop damage will be handled shall determine local communities' attitudes towards conservation and ecotourism in Kibale. Positive community attitudes will be an essential prerequisite for local participation in park management. As stated by Wood (1991), local participation and involvement are keystones in ecotourism development. In Kibale the success of ecotourism will depend upon considerable local community input.

CHAPTER 8

ENVIRONMENTAL INTERPRETATION

8.1 Introduction

Environmental interpretation is a relatively new phenomenon. Earlier studies, for example, by Graybill (1976), Tilden (1977), Stevens (1982), and Bitgood *et. al.* (1991) suggest that interpretation is an educational activity that seeks to improve Man's understanding of his environment. Seabrooke and Miles (1993) have summarised the primary purposes of interpretation as follows:

- to provide an enjoyable and rewarding educational experience for visitors;
- to enhance visitors' appreciation and understanding of the site;
- to maximise the carrying capacity of the site and minimise the impact of visitors; and
- to promote an understanding of the agency providing or operating the site.

Expansion of protected areas and introduction of ecotourism in Uganda over the past few years has created the need for proper environmental interpretation. However, little is known about the concept of interpretation in Uganda despite strong government support for programmes in environmental protection and biodiversity conservation. Interpretation is an essential process in conservation and there is a need for natural resource managers to know what it entails and to understand how it is applied. In this study, a survey was carried out with the aim of assessing the present status of environmental interpretation in Uganda. It was also felt necessary to make recommendations, based on the results of the survey, for the establishment of a national programme of environmental interpretation.

Current literature on ecotourism is explicit on the importance of interpretation in enhancing visit experience and increasing visitors' appreciation and understanding of natural ecosystems. The fast recovery of Uganda's tourism industry in recent years and the growing interest in development of ecotourism in protected areas has placed enormous demand on protected area managers to find a balance between ecotourism and conservation. Establishment of proper interpretation systems both at the national level and in protected areas would help in the achievement of such a balance. It was against this background that a survey was carried out in Kibale, Rwenzori, and Mount Elgon National Parks to collect information on the people involved in environmental interpretation, the extent of their work, their training backgrounds and experience. Additional information was also sought on facilities used, those required, and the qualities that interpreters are expected to have.

8.2 Methodology

Questionnaire Design and Administration

The postal questionnaire survey method was used to collect the information mentioned above. Two sets of questionnaires accompanied by covering letters were sent to wardens and rangers of Kibale, Rwenzori and Mount Elgon National Parks. The first set of questionnaires (SEI/1) was sent to wardens. It contained 13 questions covering topics such as job description, qualities to look for when employing an interpreter, facilities being used for interpretation work, and management skills expected of interpretation staff.

The second questionnaire (SEI/2) was sent to rangers. It contained 23 questions divided into two parts. Part one, entitled "Your Work and Training" included a mixture of 10 questions designed to obtain information about rangers' professional and

educational background. Part two entitled "Analysis of your Job" contained 11 questions. It was aimed at establishing the qualities needed by an interpreter, job motivation, perceived status of environmental interpretation within respective national parks and monthly salary.

8.3 Response

Between October 1994 and June 1996, a total of 60 questionnaires together with covering letters were sent out. Forty questionnaires were eventually returned following numerous reminder letters. Of these eight were SEI/1 and 32 were SEI/2. The response rate of 66.7% was considered satisfactory as it was above the average for this method of survey (see e.g. Burton, 1971 on postal survey method).

8.4 Data Analysis

The small sample size (N=40) could not allow rigorous statistical analysis of data. As a result only simple mathematical computation involving frequency summaries and percentages have been used to analyse the data. The results presented here, therefore, are not offered as significant data. The primary purpose of the survey was to provide basic information on the status of interpretation in Uganda's national parks where ecotourism was been introduced recently. It is hoped that in the absence of other knowledge about environmental interpretation in Uganda, the findings of this study should be of great value.

8.5 Results

8.5.1 Training and Background

It is clear from the responses to questions on educational background that three quarters of the rangers were "O" level leavers and the rest had primary school education only. Very few had received any training on interpretation. Many were recruited as general rangers but were eventually assigned to do interpretation work without appropriate skills. Four respondents claimed they had received in-service training on interpretation (Table 8.1).

Table 8.1 Educational background of rangers involved in interpretation work (N=32).

Training and Educational background	f	%
Level of Education		
Primary school	8	25.0
Secondary school	24	75.0
Post secondary school training		
Teacher training (Grade III)	2	6.25
Forest ranger	1	3.13
In-service Courses Attended		
None	16	50.0
Environmental Education	2	6.25
Biodiversity in Forest Inventory	3	9.34
Interpretation Course for Guides	4	12.25
Agroforestry	1	3.13
Nature Conservation	1	3.13
Wildlife Conservation	5	15.63

About 40 per cent said they had attended in-service courses in nature conservation although it is unlikely that the courses may have contained teaching on interpretation. Half of the rangers had not received any form of in-service training. Of the three who underwent post secondary school training, two were Grade III teachers and one was a forest ranger.

The majority (75%) were not members of any professional society/organisation. However, two claimed to belong to the East African Wildlife Society and six to the Wildlife Clubs of Uganda.

8.5.2 Terms of Employment

All the respondents were full time employees of Uganda National Parks. Half had worked for about three to five years (Table 8.2). The majority were doing interpretation as part of their jobs. This shows the multifaceted nature of rangers' work. About one third were doing general work and about 20 per cent were involved in trail development and maintenance. Almost as many were working as tour guides and 10 per cent were involved in law enforcement. In Rwenzori Mountains National Park, some rangers were specialised in mountain rescue work.

The actual number of hours spent on interpretation varied from up to 40 hours in a week for full-time ranger guides, to 9-24 hours for 46.9 per cent, and 0-8 hours for another 46.9 per cent of those doing interpretation as part of their job. Based on these figures, it was estimated that between 336-2520 man hours per week were spent on interpretation work by rangers doing it as part of their wider functions. This means that heavy demands from other duties can significantly reduce the amount of time available to rangers for interpretation. This factor needs to be considered in the national park management planning if interpretation is expected to remain an effective tool for

managing ecotourism and conservation. It is also clear from the survey that interpretation has been left to junior staff of national parks as shown by their salaries which range from Shs. 10 000 to 20 000 per month (US \$ 1= approximately Uganda Shs.1 000).

Table 8.2 Job categories, number of years worked and time spent per week on interpretation by rangers (N=32).

	f	%
Job description		
General work	12	37.5
Trail development and maintenance	5	23.4
Law enforcement	2	6.2
Research and Primate Habituation	6	18.75
Visitor guide	7	21.86
Years Worked		
1 - 2	14	43.8
3 - 5	16	50.0
6 - 8	1	3.1
Over 8	1	3.1
Hours Worked per Week		
0 - 8	2	6.2
9 - 24	15	46.9
25 - 40	15	46.9

8.5.3 Reading Materials on Interpretation

The majority (71.9%) of staff involved with interpretation did not have enough reading materials to keep them up-to-date with the theory and practice of interpretation work although the titles of the few publications mentioned clearly showed that they were directly relevant to interpretation. The titles mentioned were "Field Guide to Plants and Trees of East Africa", "Collins East Africa Bird Guidebook", "Uganda Forest Trees" and "Primate Societies".

8.5.4 Areas of Present Involvement in Interpretation

About half of the rangers were working as guides and about one third claimed they were involved in other activities related to interpretation (Table 8.3), for instance, planning (31%), administration and co-ordination of interpretation (28%). Very few (18.8%) claimed they were involved in design and display of exhibits. Another one third said they were involved in training other rangers on interpretation work, but this is unlikely to amount to much because interpretation generally is still very weak in national parks. Moreover, the survey has shown that little has been done to train rangers and guides in interpretation. Since the rangers themselves have not been trained, they cannot claim to be significantly involved in training others. It is also doubtful whether rangers were really involved in monitoring and evaluating interpretation work in the respective national parks, although a few rangers were involved in some research.

Table 8.3 Areas of present involvement in interpretation by rangers (N=32)

Area of interpretation	f	%
Giving talks to visitors	15	46.9
Field guide	17	53.1
Exhibit design and display	6	18.8
Participating in policy making through meetings etc	6	18.8
Participating in planning interpretation	10	31.3
Administration and Co-ordination of interpretation work	9	28.1
Training other staff in interpretation work	11	34.4
Monitoring and Evaluation of interpretation	7	21.9
Research	15	46.9

8.5.5 Management Skills Required for Interpretation

Eight predetermined management skills were listed and respondents were asked to indicate those skills necessary for their current interpretation work. More than 80 per cent listed knowledge of environmental protection/natural resource conservation. Two thirds indicated knowledge of wildlife ecology and management, and 62.5% mentioned forestry. Knowledge of tourism management was listed by about half and almost the same proportion indicated knowledge of local culture, history and geography. This reflects the varied nature of knowledge rangers would like to have in order to be able to undertake interpretation work. A substantial proportion (40.6%) mentioned the ability to handle the public. Knowledge of law was the least favoured skill (Table 8.4). On the basis of these results it can be said that rangers who expect to get involved in interpretative work require knowledge in three main areas namely, wildlife ecology, forestry and tourism management.

Table 8.4 Skills listed by rangers as those required for interpretation work (N=32)

Areas where knowledge is required	f	%
Environmental protection/resource conservation	27	84.4
Wildlife ecology and management	21	65.6
Local culture	15	46.9
Forestry	20	62.5
Tourism management	16	50.0
Law	8	25.0
Ability to handle the public	13	40.6
Local culture, history and geography	15	46.9

Responses by wardens to a similar question were different. In their view, the most essential management skill required for interpretation is communication both verbally and in writing (Table 8.5). Most of the wardens felt that the ability to handle the public and to plan, develop and evaluate interpretation was important as well. Almost two thirds mentioned knowledge of law as an essential skill. Since the answers came from a very small sample it is difficult to make significant inferences from the findings.

Table 8.5 Wardens' views on management skills required for interpretation (N=8)

Management skills	f	%
Knowledge of Law	5	62.5
Budgeting and Financial Control	3	37.5
Planning and Development of programmes	7	87.5
Evaluation of programmes and personnel	7	87.5
Training staff	5	62.5
Delegation of Duties	3	37.5
Ability to communicate verbally and in writing	8	100.0

Table 8.5 continued

Management skills	f	%
Co-ordination of activities	5	62.5
Advice and Counselling personnel	5	62.5
Supervision of work and personnel	7	87.5
Handling the public	7	87.5
Research	2	25.0

Despite the small sample size, however, the results serve to illustrate that planning is an important aspect of interpretation. The least important skill indicated by the wardens was delegation of duties and ability to do research.

8.5.6 Qualities Required for Interpretation

Eight qualities of a professional nature were listed in questionnaires SEI/1 and SEI/2 and respondents were asked to indicate those they would look for when employing an environmental interpreter. There was a common rank order of priorities (see Table 8.6) and a general agreement in the rank priority given to qualities (2) and (8). Differences, however, were noted in the ranking of the other six qualities. Knowledge and understanding of resource conservation and management was ranked first priority by wardens, whilst knowledge of man made and natural environments was ranked highest by rangers. Wardens considered the ability to use various communication skills and techniques as well as practical experience with use of interpretation materials and methods more important than do rangers. The composite ranking of the qualities from the two surveys has shown that when employing interpreters knowledge of resource conservation and communication skills would be the first qualities to look for.

Table 8.6 Qualities to look for when employing an environmental interpreter. Average score and ranking by wardens (N=8) and percentage response by rangers (N=32).

Qualities	Av.score	Rank ¹	%	Rank ²	Sum. av
1. Knowledge of man made and natural environment	3.5	3	71.8	1	2.0
2. Knowledge and understanding related to human behaviour	4.5	4	46.8	4	4.0
3. Ability to use various communication skills and techniques (including fluency in speaking, writing, expressive arts etc)	3.1	2	59.4	3	2.5
4. Practical experience with and use of interpretation materials and methods	4.5	4	43.8	5	4.5
5. Experience in presentation of interpretation materials and methods	6.0	5	37.5	6	5.5
6. Knowledge and understanding of resource conservation and management	1.5	1	68.8	2	1.5
7. Ability to lead, motivate, and counsel staff	6.5	6	3.12	7	6.5
8. Ability to pursue a concept from its inception to implementation	6.5	6	43.8	6	5.5

Sum. av = summary average of ranking by rangers and wardens

1= ranking by wardens

2= ranking by rangers

8.5.7 Motivation

It is clear from the findings of survey SEI/2 that rangers were first employed to do work other than interpretation. When asked what motivated them to take up their present jobs, more than 50 per cent mentioned employment opportunity and over three

quarters said it was because the job involves working with people (Table 8.7). About 13 per cent stated personal challenge and 15.6 per cent mentioned higher salary. Nearly two thirds said environmental concern whilst 46.9 per cent thought the job would give them the opportunity to further their involvement with nature. It can be implied from these findings that in-service training on interpretation will be well received because the rangers already have great interest in activities related to nature conservation. When employing rangers in future, national parks may need to look for people who have some knowledge in these areas so that in-service training on interpretation would only serve to enhance their skills.

Table 8.7 Factors that motivated rangers to take up their present jobs (N=32)

Motivation factors	f	%
Employment opportunity	17	53.1
Environmental concern	20	62.5
To further involvement with nature	15	46.9
To work with people	25	78.1
Higher salary	5	15.6
Personal challenge	4	12.5

Though 57.5 per cent felt that interpretation received its rightful status within their respectful national parks, it is very unlikely that this was the case because as already mentioned above, interpretation is still little understood in Uganda.

8.5.8 Status of Interpretation

The majority of wardens and rangers felt that national parks have clearly stated objectives on interpretation to guide their work. But this can be doubted because none of

them could state those objectives. Fifteen per cent admitted that the national parks do not have any policy on interpretation, a view shared by the author. Almost the same proportion had no idea (Table 8.8).

Table 8.8 Views by wardens and rangers on the status of interpretation in their respective national parks (N=40)

Responses	f	%
<i>Has your organisation got clearly stated objectives on interpretation?</i>		
Yes	27	67.5
No	6	15.0
No idea	7	17.5
<i>Does interpretation have a rightful status in your organisation?</i>		
Yes	23	57.5
No	13	32.5
No idea	4	10.0
<i>Do you envisage increased use of interpretation?</i>		
Yes	40	100.0
No	0	0
<i>Do you have enough facilities/resources for interpretation?</i>		
Yes	0	0
No	40	100.0

In the main, the rangers and wardens did not know how they could influence the objectives of interpretation (if there were such objectives) in their respective national parks. Even the wardens, who are more senior officers in national parks, have very little knowledge about interpretation although they envisage its increased use. There were suggestions that adequate resources should be provided and facilities made available for

interpretation. Table 8.9 shows a list of facilities and better conditions of service required by rangers involved in interpretation.

Table 8.9 Facilities and better terms of service required by rangers involved in interpretation work.

Facilities required

- Audio visual equipment
- Binoculars
- Rain coat for field work
- Waterproof boots for field work
- Cameras
- Reading materials on interpretation
- First aid kit for the mountain rescue group

Better terms of service

- Higher salaries
 - Transport, Housing and Medical allowances
 - Further training
 - Study tour within the country and in the East Africa region
-

8.6 Conclusions

This study has shown that the status of environmental interpretation in Uganda is still generally very poor and that the concept is little understood. Several reasons are responsible for this state of affairs. Firstly, it has become clear from the survey that Uganda's national parks, at this stage, do not have clearly stated objectives on interpretation. Even at the highest level, it appears the National Parks and Wildlife Service (NPWS) does not have any policy on environmental interpretation. Interpretation has either been overlooked or is simply not given any priority in park

management. However, it needs to be pointed out that interpretation can play a crucial role in conservation and management of ecotourism.

Secondly, the rangers involved in interpretation work did not know at the time they were being employed that they would be involved in interpretation. The rangers have fairly low educational backgrounds and never received training in interpretation prior to being employed with national parks. As such they have little knowledge of interpretation. The fact that rangers were employed after completing primary or secondary school education only makes the situation even worse because they would not be able to understand certain aspects of ecology and biological conservation and at the same time interpret them well to visitors. There is a need for rangers to undergo proper training in interpretation before being assigned duties as guides. Even those who claimed to have attended courses on interpretation would require further training in order to enhance their interpretation skills.

As environmental interpreters in national park settings, rangers require knowledge of ecology, conservation and tourism management. They also need to be provided with adequate reading materials to keep them up-to-date with the theory and practice of interpretation. As noted by Seabrooke and Miles (1993), interpretation requires not only a subject to interpret, but also a medium for communicating the subject to the intended audience. To this end, proper visitors/interpretation centres need to be established in the national parks. Facilities such as audio visual equipment, well designed posters and good information displays are essential in interpretation and should be provided as well although funding for such developments will remain a problem.

8.7 The Need for a National Programme of Environmental Interpretation

As mentioned earlier, there is a need for a programme for environmental interpretation in Uganda. Although the idea may appear to be ambitious, such a programme is indeed necessary because it would play a pivotal role in the on-going efforts to protect the environment and conserve the country's biodiversity. Initially, the programme may concentrate on training in interpretation but in the later stages more attention could be focused on improving the quality of interpretation. This, however, will require sufficient support from the government, for example, in the form of allocation of sufficient resources. The recent establishment of the National Environment Management Authority (NEMA) was widely seen as a clear sign of government commitment to environmental issues in the country. It would be appropriate, therefore, to establish environmental interpretation as a department under NEMA.

Training in interpretation at the national level may be co-ordinated by NEMA whilst the NPWS may be responsible for in-service training programmes for staff in the national parks directly involved in interpretation work. Training may start with courses designed for trainers. Participants may be drawn from government departments and agencies whose activities involve environmental interpretation such as the Forest Department, National Parks, the Uganda Museum, Department of Antiquities, the Botanical Garden, Tour Companies and NGOs such as KAFRED in Kibale. In the later stages, training may be decentralised to agency level so that individual agencies or departments can conduct courses appropriate to their needs.

At departmental or agency level, training may take place at one or more stages of staff appointment. As pointed out by Stevens (1982), the principal qualities sought in an interpreter are personality characteristics, but interpretation is a teachable art. Training may be given before service begins and may be academic or professionally oriented as a

basis for long term career development. At the same time it may be given while in-service as part of a skill foundation or career development programme, again in the form of in-service courses. On the other hand it may be included as part of curriculum for teaching in institutions carrying out training, for instance, in forestry, wildlife ecology and tourism management. Many graduates from such institutions usually obtain employment with organisations involved in natural resource management where interpretation is essential.

Inter-agency or inter-departmental partnerships may also be developed to increase effectiveness of interpretation. According to Capelle and Farrell (1991), developing and fostering a variety of resource agency partnerships is a major way of achieving greater interpretative effectiveness. Areas of interpretative partnerships may include Institutional partnership (e.g. Resource Agency - University), Intra-agency partnerships, and Resource Agency - Private Sector (Consultant) partnerships.

CHAPTER 9

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

The purpose of this chapter is to bring together information obtained from the four major parts of this study namely, environmental evaluation of Kibale National Park, visitor survey, survey of local communities' perception and attitudes towards conservation and ecotourism development, and an appraisal of the status of environmental interpretation in Uganda. The major conclusions and recommendations of the study have also been given. The chapter has been divided into three major sub-sections as follows: Introduction (sub-section 9.1), General discussion (sub-section 9.2), Conclusions (sub-section 9.3) and Recommendations for future research and development of ecotourism in Uganda (sub-section 9.4).

9.2 General Discussion

As resources, forest lands are probably more important in the tropics than in the temperate zones (UNESCO/UNEP/FAO, 1978). But tropical forests have for a long time been little appreciated for their aesthetic and recreational values. According to Wordsworth (1981), people in the tropics have been more preoccupied with other basic necessities of life, yet the biodiversity of moist tropical ecosystems can be presented and interpreted in ways that are of great human interest.

Much of the world's biodiversity is concentrated in the tropics (FAO, 1993). Over the past few decades, increased population pressure for social and economic development in most tropical countries has contributed to a continuing trend in the

reduction of areas under forest cover (Whitmore, 1990). This has raised concern over the status of species endemic to natural forests. Consequently, several approaches have been developed, aimed at preserving the biodiversity. One of the most significant approaches has been the conversion of some tropical forest reserves into national parks. According to the IUCN (1992c), the national park is the highest conservation status that can be conferred upon a protected area. There are ten categories of protected areas in Uganda (see e.g. Edroma, 1993) which altogether cover about 12 per cent of the total land area. In an attempt to conserve the country's biodiversity, some of the natural forest reserves were converted to national parks and Kibale was among the first of these. Ecotourism was subsequently introduced in this new category of forest national parks. The parks are multiple-use protected areas with ecotourism being practised alongside conservation.

The environmental evaluation carried out in this study has confirmed that Kibale National Park has the potential for ecotourism. It is clear from a number of sources that the evaluation of natural areas for purposes of identifying their importance and planning management has recently gained widespread use. It has been possible to demonstrate through this study that although no standard approach exists for evaluating the recreation and ecotourism potential of natural areas, methods such as the multi-criteria models used in chapter 5 can be applied reasonably well. It is therefore quite conceivable that similar studies may be carried out in the other protected areas of Uganda prior to the introduction of ecotourism.

Current debates on the sustainability of ecotourism in protected areas focus on the need to maintain a balance between ecotourism and resource conservation. Fears have already been expressed about ecotourism as a self destructive process and Cater (1991) has emphasised that ecotourism should be developed in tandem with the conservation of environmental resources. These debates and discussions all lead to the conclusion that

ecotourism must be environmentally sustainable. However, environmental evaluation is a vital process that needs to be carried out prior to the introduction of ecotourism. Essentially, sustainable ecotourism can only be achieved when there is a clear understanding of the environment that supports it. This study has demonstrated that the potential of an area for recreation and ecotourism can be evaluated by considering the environmental resources that attract tourists.

It is expected that ecotourism in Kibale will continue to depend on nature preservation and this will demand important management efforts in order to prevent or minimise human-related damage to the parks' natural environment. To this end, a clear understanding of the ecology of the recreation area would be essential, and information on the species diversity and composition needs to be known. As observed by Lajeunesse *et. al.* (1995), knowledge of woody species diversity and composition is vital if the ecological integrity of a protected area is to be maintained. It can be implied from this observation that proper knowledge of woody species diversity in areas with a high level of recreational activities, can be used to establish a sound basis for planning the preservation and management of ecotourism in protected areas. The rationale for assessing woody species diversity itself also needs to be known. Basically, there are two main reasons why the biological diversity of an area should be studied. First, it simplifies implicit recognition of the dynamic nature of a protected area, a phenomenon that has not yet been fully explored in Kibale. Secondly, studying woody species diversity in protected areas is known to be ecosystem effective because plant communities provide critical habitats for other living organisms as well.

Since the introduction of ecotourism in Kibale, one of the management objectives has been to minimise the amount of all aspects of human-related damage and to maintain the ecological status of the Park. This study has provided information that can be built upon for the periodic assessment and evaluation of ecological changes which are likely

to result from ecotourism in Kibale. For example, new colonising woody species may be introduced and will need to be detected through regular monitoring. Species monitoring in protected areas with high human usage is essential because it has been reported that the introduction of alien species can destabilise ecosystem structure and function (Ramakrishnan, 1991). Cronk and Fuller (1995) have given a clear analysis of the nature of plant invasion and how it occurs in different environments. At the same time, Usher (1991) has discussed the implications of biological invasion and explored ways in which invasive species can cause the extinction of indigenous ones, thereby reducing biological diversity. Of particular interest to this study is his observation that the tropics has been the most vulnerable ecological zone to biological invasion. This observation further demonstrates the importance of evaluating and monitoring species diversity and composition in protected areas in the tropics.

Since there are plans to open up a second campsite and entry point into Kibale at Sebitoli (Reid, 1993) in the north, it would be important for such a development to take into account the ecological preservation of the Park, an idea which appears to have been omitted when the first visitor facilities were established at Kanyancu tourist centre. Opening up the entry point at Sebitoli will certainly disturb the *Parinari* dominated forest community there, utmost care should therefore be taken to avoid much loss of species diversity and composition. In this respect the Park managers need to give priority to the maintenance of the ecological integrity of the Park. By considering ecological principles in the management of Kibale, ecological preservation should gradually become a major aspect of management planning.

As mentioned in Chapter 5, environmental degradation is a common problem in protected areas open to recreational use. Several studies have looked at the impact of camping in national parks, for example, Cole (1988; 1995) and the impacts of recreation on campsites and trails are well documented, for example, Bates (1935), Bayfield

(1973), Liddle (1975), O'Hare (1978), Quinn *et al.* (1980), and Goldsmith (1983). Generally, the studies have elaborated on the obvious effect that greater impact occurs with increase in visitor numbers. This suggests that the most effective management strategy that can be adopted in protected areas is to keep the visitor numbers low. For this purpose, there is a need to understand the nature and magnitude of recreation impact so that an optimum number of visitors can be determined.

In Kibale, the number of visitors was estimated to reach 5 000 in 1995 and compared to other older national parks in the country, the number is considered to be relatively low. In spite of the low number of tourists, this study has shown that a substantial level of damage is already occurring on the camping sites (Plates 1 and 2) and on the nature trails. This finding agrees with reports from Costa Rica (see Rovinski, 1991 and Fennell and Smale, 1992) that trail erosion has become a major problem in many of the national parks following an increase in the number of visitors to the country from 300 in 1973 to 15 000 in 1989. In KNP, ecotourism is only about four years old and already more than three quarters of the camping sites are experiencing some form of degradation and about 10 to 30 per cent of the trails (see Plate 3) are under erosion. This points to the need for more effective environmental management of the Park. Ideally, the first thing to do in this case would be to establish the recreation carrying capacity for KNP and adhere to it so that the objectives of ecotourism do not conflict with the goals of conservation. But lack of methodology to assess the recreation carrying capacity renders this option impracticable. The relationship between conservation and ecotourism have been much discussed in the literature (see e.g. Rovinski, 1991), but the observation by Boo (1991) is noteworthy in this case. In an apparent reference to the environmental effects of tourism, she noted that tourism, if not managed properly, can destroy itself. Therefore, in the absence of a standard methodology for determining the recreation carrying capacity, the best option is to ensure that the park environment is well managed.



Plate 1 Camping facilities on the group camping site in Kibale



Plate 2 A degraded camping site in the wet season



Plate 3 An example of a grassland nature trail in Kibale

It has also become clear that the impact of visitor activities on the camping sites in Kibale is greater in the dry than in the wet season, most probably because in the dry season the grasses dry up, become brittle and are easily destroyed. Apart from the impact varying in the different seasons, Cole (1995) has attempted to explain the severity of campsite impact in terms of frequency of use. He noted that in the USA, sites that are frequently used experience greater impact and are less resistant to deterioration than those which are infrequently used. In Kibale, the deterioration of camping sites can be attributed to the rise in visitor numbers over the past few years and an increase in the frequency of use. This, however, is expected considering that KNP is a newly established tourist destination and therefore likely to attract a large number of tourists.

Analysis of the impact of regular visitor use of the trails has also shown that irrespective of the slope and vegetation, trail erosion and root exposure are already occurring in many places along the trails. The statistical analysis carried out using the G - test confirmed this observation as there was a significant association between erosion, slope and vegetation cover. Nevertheless, the fact that the average slope on the grid trails was only 9° and on the loop trails was 12.9° means that several places in the Park with steep slopes were avoided during trail construction. It has been noted by Liddle (1975) that trail management and trail width are significant factors in the trail degradation process. Although these factors were not examined in this study, Liddle has shown that un-managed narrow trails with varying surface roughness discourage many visitors who prefer to walk instead on the adjacent grass thereby increasing the area of bare ground and erosion. In Kibale, current management regulations limit the size of a party on the trails to nine and only six walks are allowed in a day (R. Ssenkungu, 1995 - personal communication). Of the nine persons, six are visitors and three are guides, and although a party of nine people may appear to be a small and manageable group, the findings of this study suggest that six walks per day seems to be unsustainable on the present trails. An optimum number of walks per day therefore needs to be properly

determined as it appears to be a critical factor in trail erosion. In order to be able to compute the number of walks that can be allowed in a day, the number of visitors and level of visits need to be known.

In this study, information on visitors was collected with the primary purpose of understanding their characteristics. But in gathering data on visitors, a number of difficulties arose. The most common problem was how to identify and obtain adequate samples of respondents. The lessons learnt from this study is that a sample size of 200 may not be adequate to permit a reasonable statistical analysis to be carried out. Problems were encountered when trying to observe the relationship between very obvious variables such as reasons given by visitors for choosing to visit Kibale and the subsequent activities they participated in (see Tables 6.8 and 6.9). The difficulty in observing significant correlations between the variables could only be attributed to the sample size used. So, if the sample was a mitigating factor, then samples sizes bigger than 200 would be more appropriate to use in future studies of this kind. If similar observations re-occur even with bigger sample sizes, then the cause of the problem can be assumed to be different and would need to be investigated.

As stated by Locke (1985), to try to describe a typical visitor to a park is to tempt providence. It has become clear from this study that different categories of people visit Kibale for various reasons ranging from wildlife viewing to relaxation in a quiet forest atmosphere. The chief activity is clearly chimpanzee (*P. troglodytes*) viewing. Another major observation was that more than 90 per cent of visitors to Kibale come from overseas and the minority are Ugandans. Among the Ugandan visitors, the majority is made up of school groups. This observation can be explained in several ways. Firstly, it is possible that many Ugandans are already familiar with their natural environment and the wildlife, and are therefore not inclined to visit places like national parks. Secondly, visits to national parks in Uganda has historically been associated with foreign tourists.

This attitude, however, needs to be changed because national parks are not established for foreigners only. Since Kibale operates a two tier fee structure (R. Ssenkungu, 1995 - personal communication), Ugandans should be encouraged to take advantage of the lower fees charged to visit the Park. Clearly then, there is a need to inform Ugandans about the recreational facilities available in Kibale and to encourage them to visit the Park so that they can enjoy the rich biological diversity and even learn about the importance of conserving them.

Another possible reason for the low numbers of local visitors to Kibale may be related to socio-economic status of many Ugandans. It is clear from the discussion presented in Chapter 3 that, factors such as marital status, education, employment and income greatly influence participation in outdoor recreation (see e.g. Burton, 1971; Clawson, 1971; and Seeley, 1973). It is further evident from several sources that the more critical factor among these appears to be income. In Uganda, many people seem to be preoccupied with doing other types of work during leisure time to supplement their incomes since their salaries are low (see e.g. Table 6.14). It would therefore be correct to assume that economic hardship is the major factor in explaining the low rate of participation in outdoor recreation. Carter (1985) has reported similar problems in Malawi where he noted that nationals account for only 1.1 per cent of all the fee paying visits to national parks. He further observed that the disproportion was not due to lack of interest, but to costs and difficulties of transport and accommodation. Several suggestions have been put forward in an attempt to encourage people from developing countries to visit protected areas where ecotourism programmes exist. Price (1986) and Bell and Clarke (1986), for example, have suggested that access to protected areas by nationals should be provided in the form of cheap accommodation and transport. Though this may be a worthy idea, Bell and Clarke do not state clearly how such a scheme could be implemented.

As reported in Chapter 6, most of the visitors come to Kibale on pre-planned tour packages. It was noted that about one third of the foreign visitors were students on vacation and the majority were visiting for the first time. This finding is of some economic consequence for Kibale. If the number of students on vacation increases in the future, it means that little money would be injected into the local economy in Kibale since students have low incomes. As a result, ecotourism may not have a substantial economic impact on the local communities surrounding the Park. It has already been noted in chapter 1 that one of the basic aims for introducing ecotourism in protected areas is to provide a means for economic development and for improvement of the welfare of the local communities. If the visits to Kibale continue to be dominated by students, then the economic benefits will be low. As shown in Table 6.6 the number of repeat visitors is very low (4%), yet according to Ryel and Grasse (1991) repeat visitors often account for much of the revenue generated from ecotourism. If this is true, then other ways of increasing the revenue from ecotourism will need to be sought since the number of repeat visitors is very low.

Another important finding from the visitor survey already noted above was that most of the visitors choose to go to Kibale primarily to view wildlife and to relax in the forest's natural setting. This agrees with a report by Crowther *et. al.* (1995) in their book "The Lonely Planet: Africa Edition" that the chief wildlife attraction in Kibale is forest primates and especially the chimpanzee (*P. troglodytes*). As indicated earlier, it is reported in this guide that the chance of seeing the chimpanzee (*P. troglodytes*) is only 25 per cent, but in reality it is much higher, particularly when the walks are conducted very early in the morning before 7 am (R. Ssenkungu, 1995 - personal communication).

It has become clear that one of the ways in which people learn about places to visit is by word-of-mouth (Locke, 1985 and Eadington and Smith, 1992). Based on this premise, it would appear that, if Kibale was to be promoted as an ecotourism destination

without overtly advertising, then information dissemination by word-of-mouth would be an option to explore. This will, however, require sufficient printed materials to be made available to the visitors before they leave the Park. It is possible that from the leaflets, information may then be disseminated to reach a much wider public by word-of-mouth. This method would be appropriate for Kibale where a marketing campaign cannot be mounted due to financial constraints (R. Ssenkungu, 1995 - personal communication). It may be argued that advertising Kibale as a tourist destination would certainly make much economic sense, but the likely danger of doing so is that it may become counter productive because very high numbers of visitors may turn-up and cause environmental degradation.

It was indicated by the majority of visitors during the interviews that the idea of protected areas and the experience gained from previous visits to other national parks were significant in influencing the picture of what to expect at Kibale. This observation correlates well with Boo's (1991) findings from a study in Latin America and the Caribbean in which more than half of the visitors surveyed admitted that the idea of natural areas was important in influencing their decision to visit. Since visitors to Kibale do seem to appreciate the importance of protected areas, it means that the managers are dealing with people who are conservation conscious. Also, if Boo's (1990) definition of ecotourism is true, then it can be assumed that visitors to Kibale will support conservation of the Park.

On the basis of the findings of this study already noted above and the information available in literature, it is clear that visitor numbers is an important factor in the management of sustainable ecotourism. Eadington and Smith (1992) have also noted how high tourist numbers alter the natural experience of a destination and impairs its ability to provide future tourist resources. This leads to the question of whether the current visitor numbers at Kibale should be maintained although they are still considered

to be relatively low. Several answers may be suggested in this respect, but a significant point to note is that Kibale is a natural forest and its fragile ecosystem would not withstand heavy pressure from high levels of visitor activities. The problem of high tourist numbers and the environmental effects have been widely discussed but observations by Foin (1976), Cater (1991), and Butler (1991 and 1992) suggest that if a decision is to be made to reduce visitor numbers, then it must take into account the likely political, social and economic consequences. In the case of Kibale, the number of visitors will have to be limited in order to prevent further deterioration of the Park's environment and the decision to limit the numbers will have to be done against the risk of losing substantial amounts of revenue. Given the dire need to earn foreign exchange from tourism, it is unlikely that neither the government nor the NPWS will take such a decision.

Several suggestions have been put forward by visitors relating to the provision of decent accommodation and better meals. Although it would be useful to improve the standard of accommodation in Kibale, the worry is that putting up decent hotels and restaurants in and around the Park will involve significant alteration of the environment which contravenes the goals of conservation. However, private entrepreneurs could be encouraged to invest in the business, although proper planning will be required to ensure that the facilities are located far away from the Park. Eadington and Smith (1992) have pointed out the dangers of investing in protected areas for the purposes of promoting ecotourism and noted that heavy investments do encourage over-exploitation of resources which in the long-run destroys ecotourism itself. This would be an important point to note in any future proposal for provision of decent accommodation and other facilities.

The present modest accommodation in tents at Kibale is perhaps the most appropriate for a protected area. The tents are easy to maintain and blend well into the

natural environment. If most visitors participate in camping, then more accommodation will be provided indirectly, since camping is both an activity and a form of tourist accommodation (Wall, 1992). On the other hand, it may be argued that lack of proper accommodation may make Kibale lose its competitive position as a tourist destination. As noted by Bovaird *et. al.* (1984), however, there are several strategies that may be adopted in order to maintain a destination's competitive position and the demand for facilities without investing in more expensive infrastructures such as hotels. The first is by maintaining the visitors' awareness and perception about the facilities. The second is by influencing the demand through diversification of activities. In this way, visitors' expectations can be raised and the level of satisfaction maintained. In the case of Kibale, it would be appropriate to consider similar strategies in order to maintain the demands for the facilities. However, other management options may be explored as well so that the Park's resources are protected from high levels of visitor use. As will be seen later, it is often difficult to consider issues related to ecotourism in protected areas without taking into account the needs of local communities.

West and Brechin (1991) and Kothari *et. al.* (1995) have observed that national parks can benefit local communities in a number of ways and that exploitation of resources from protected areas may not necessarily interfere with conservation. Studies in India and Southern America have shown that exploitation of resources by local communities does not destroy protected ecosystems if the process of resource extraction is managed properly (Kothari *et. al.*, 1995). Similar observations have been made by IUCN (1992a) regarding conservation of natural forests in Africa. They noted that up to the end of the 19th century, African cultures had a tradition of protecting forests which were surrounded by human settlements. This observation describes the situation in Kibale because the Park is surrounded by agricultural lands with dense human population. Kibale National Park is located in Kabarole District which has a population growth rate of 3.29 per cent per annum and a population density of 75 - 99 persons per

square kilometre (Ministry of Planning and Economic Development, 1995). The local communities bordering the Park are subsistence farmers who have been accustomed to free collection of forest products. From the time Kibale forest reserve was made a national park, various rules and regulations have been imposed on the utilisation of forest resources. As a result of strict law enforcement, the traditional forest use rights of the local communities have gradually diminished. Despite the strict laws, this study has found that local communities still obtain forest products from the Park although the rates of resource extraction vary between the surrounding parishes. At the same time it was noted that certain forest tree species are favoured and therefore used more frequently.

The results presented in sub-section 7.9.2 show that the following species were the most commonly extracted and are likely to become threatened: *Cordia millenii*, *Milletia dura*, *Bridelia micrantha*, *Phoenix reclinata*, *Diospyros abyssinica*, *Teclea nobilis*, *Melicia excelsa*, *Olea welwitschii*, *Entandropragma spp*, and *Lovoa swynertonii*. This finding supports an earlier report by Howard (1991) that species such as *M. excelsa*, *Entandrophragma spp*, *L. swynertonii*, and *C. millenii* have been listed as endangered in Kibale and this obviously raises concern for their conservation. It would be appropriate therefore to institute measures that would help to conserve the species. The best starting point would be to determine the stocking density of the species and to control their utilisation. In addition, it would be necessary to quantify the amount of plant off-take from the Park according to the parishes.

It has already been noted in Chapter 2 that hunting is common in Uganda's forests and in Kibale traditional hunting of wild animals will most likely present an additional conservation problem. It was noted during the local survey that wild animals from the Park were hunted for bushmeat which forms an important component of the household diet. There were also reports that bush meat was being sold to raise money for meeting other domestic expenses. Some people alleged that the price of bushmeat

was higher than that of beef in Fort Portal town. Considering the value of preserving the Park's biodiversity, it would be logical to suggest a complete ban on hunting in the Park and the surrounding lands. But as noted by Infield (see IUCN, 1992c) such a measure may not be effective because local communities would instead step up use of resources from the Park including those previously considered to be of less economic importance. Therefore, a better solution would be to establish a sustainable system of hunting in and around the Park. If such a measure were to be adopted in Kibale, it would require regular assessment and monitoring of wildlife populations in the Park and implementing programmes that would ensure a sustainable level of hunting. Furthermore, it would require development of mechanisms that enable local communities to regulate their own hunting activities. A report by IUCN (1992c) indicates that illegal hunting can be turned into an attractive rural enterprise that eventually helps in the conservation of wildlife. Though complex, such a programme could be experimented in Kibale and other protected areas in Uganda. Again it would be essential to establish, if possible, how many animals are killed per day and how this varies among the parishes.

Conservation of wildlife in national parks is often associated with complex socio-economic problems. Myers (1972), Yeager and Miller (1986), Bunett (1990), and Akama *et. al.* (1995) have analysed the major problems of wildlife conservation and examined how certain approaches result in poor relationships between national parks and local communities. It emerges from their discussion that conflicts between local people and wildlife is a common phenomenon in and around protected areas. In their view, people living in close proximity to national parks are often suspicious and hostile toward policies aimed at conserving wildlife. The present study has found that some sections of the local communities living around Kibale National Park have negative attitudes, though it seems to be much less than has been reported for other areas in Africa (see e.g. Akama *et. al.*, 1995). This is probably because in Uganda the problem of access to land, which is usually the major cause of conflicts, is less serious than in the other African countries

with larger areas of land under national parks. In Kibale, land scarcity was not a major problem until immigrants arrived from Kigezi. The hostile attitudes held by some people in Kibale have essentially arisen from problems of land scarcity following a rapid increase in population. When some households acquired land in the forest, it was because of the desperate need for cultivation land. The eviction of the same households a few years later apparently worsened the situation and the attitudes of the local communities became more hostile towards the Park. It would, therefore, appear that as long as hostile attitudes persist, local participation in conservation in Kibale will be hard to achieve. Some suggestions were raised by local communities regarding degazetting of parts of the Park for local settlement. It is very unlikely that the suggestions will be considered by NPWS. Nevertheless, the important lesson that can be learnt is that conservation programmes should be planned together with the local people.

Crop damage was the major wildlife problem reported and raises the question of whether wildlife conservation and ecotourism can be achieved in an environment where such damage contributes significantly to local communities' hostile attitudes towards the Park. The manner in which the problem will be handled, however, will determine the future of wildlife conservation and ecotourism in Kibale. The approach that will ultimately be applied should consider options such as compensating the local communities for the crops damaged by wildlife. Other problems related to land scarcity will also need to be looked into. Provision of vocational alternatives is an option that may be explored to reduce forest dependence. Already IUCN is attempting to address some of these problems in Kibale through the Integrated Conservation and Development Project (ICDP). Care will need to be exercised in this respect because a report by Oates (1995) based on a study of forest reserves in Nigeria suggests that a development approach to conservation that places strong emphasis on immediate human needs rather than on the protection of nature can promote destruction, not the conservation, of resources. Another measure worthy of considering is to raise the park charges so that

part of the money collected can be used to compensate farmers for the crops damaged by wildlife. This may eventually help to change some of the negative attitudes towards the Park. In addition the Park managers could consider strengthening the current initiatives (see Reid, 1993) aimed at integrating wildlife as a positive factor in the lives of local people. Furthermore, there should be a significant shift from past coercive strategies that have attempted to keep the Park away from the local communities. There is increasing recognition that a protection strategy that alienates local communities, besides being unjust and disrespectful of people's fundamental rights, is also detrimental to wildlife conservation (see e.g. Scott, 1994; Kothari *et. al.*, 1995; McGregor, 1995; and Van Burren, 1995).

The commonly held view that local people have nothing to offer in park management and that their ways of life are inimical to wildlife conservation must also change. Kothari *et. al.* (1995) and Stycos and Duarte (1995) have already drawn attention to the need for establishing more flexible legislation concerning local community use rights in protected areas and suggested that local communities should be involved in the planning and determination of inviolate core areas and sustainable use of resources in the buffer/community use zones. Involving local communities in demarcating areas where they would obtain resources may also help in generating positive attitudes towards the Park.

Apart from exploitation of resources, local communities can benefit from tourism as a main source of revenue from protected areas. In Kibale, some of the local communities have already established small-scale tourism businesses such as selling food and hiring out private houses as lodges to tourists. As ecotourism grows, more people are likely get involved in similar trades and this will also help to make local people perceive ecotourism as a profitable economic alternative to forest exploitation and consequently the pressure on the Park will be significantly reduced. It is true, however,

that tourism alone cannot protect national parks. However, given the prospects for growth of ecotourism in Kibale and assuming that many people will be involved in small-scale tourist business, then it is possible that the exploitation of resources from the Park will be much reduced.

At this juncture it is important to emphasise the need for revenue sharing. The mechanism by which revenues from tourism shall be shared needs to be properly worked out. Although plans for revenue sharing have been formulated (Reid, 1993), the precise methodology for implementing the scheme is still unclear. Reid's report suggests, however, that 20 per cent of the revenue should be given to the local communities to support local development projects. If the revenue sharing scheme works well, future efforts should then be directed towards sharing revenue with local communities as it provides an important incentive for local participation in the conservation of resources in protected areas.

It has already been noted by Overdevest and Green (1995) that the object of all resource management is to create and retain a flow of benefits to people. However, resources need to be protected from all forms of human activity if they are to provide a continuing stream of benefits. Since ecotourism operates alongside conservation a well organised environmental interpretation system is essential. It is important to emphasise here that ecotourism in Uganda is likely to depend, to a considerable extent, on successful environmental interpretation. As already noted in chapter 8, interpretation in Uganda is still poor and the concept is little understood. There is therefore a need for the establishment of proper interpretation systems in all protected areas having ecotourism programmes. Proper facilities for interpretation will also need to be provided.

Assessment of the interpretation centre in Kibale revealed that no facilities exist for proper interpretation and the exhibitions were of a poor standard. There were no

printed materials about the Park and the few posters that were hung on the walls displayed pictures of animals found in some national parks in Kenya and Rwanda. Though genuine problems of lack of money were blamed for the absence of printed materials, it was very easy to reach the conclusion that interpretation has not been accorded high priority and has been regarded as a minor activity. There was no evidence to suggest that attempts had been made to incorporate interpretation in the Park's management plan.

Since interpretation is an educational process that involves cognitive learning, good displays would be of paramount importance. Lindsay (1990) has already noted that displays should be able to hold visitors' attention long enough to allow information to be assimilated. At the same time she suggested that the media used must be able to hold visitors' attention and provide a voluntary learning process. The type of media used is therefore important as it determines the effectiveness of interpretation. Visual aids such as posters are very important in this respect. It is absurd that the visitors centre had poor displays because Kibale has had more than 20 years of research on primate ecology (see Ghiglieri, 1984) and the huge amount of information that has been accumulated should be displayed for the benefit of visitors. It is likely that visitors do not learn much about Kibale because of poor interpretation. There is a need to improve exhibitions and, where possible, the displays should include some form of activity. It has been reported by Prince (1982b) that displays posing questions to visitors are more likely to stimulate interest than factual labels only. The text accompanying the displays should also be written accurately and interestingly and should be relevant to the visitor.

Furthermore, it would be important to consider the usage of large and clear photographs to display the various forms of wildlife found in the Park because good pictures increase interpretive effectiveness. Attempts should also be made to ensure that the displays are directly relevant to the local theme. The arrangement and display of

information is also significant. In Kibale, the arrangement of information was unsatisfactory and yet the purpose of visual displays is to reinforce the visitors' learning process. Since the majority of visitors come from overseas, proper use of photographs would be vital in increasing the appeal of the Park. Experience from other countries (see e.g. Lindsay, 1990) has shown that people on short visits and those visiting for the first time are usually able to learn about a place very quickly, if the information is well displayed. In Kibale, this technique is required for improving the satisfaction of short stay visitors especially those who often stop over very briefly while en-route to other national parks.

In summary, structured displays with headings, sub-headings and connected photographs should be used as they have greater interpretive ability than unstructured displays with disjointed photos. As noted above, the layout and arrangement of information is important. Crowded displays confront visitors with a mass of undifferentiated material, but good displays make relationships between items clear and do not overload visitors. Exhibitions should therefore have clear organisation and the concepts must be linked together by proper themes. If photographs are used, they should not be placed too close because it gives a crowded effect and are less likely to be studied. The displays in Kibale were characterised by unrelated facts, a situation that merely destroys the visitors' chance of assimilative learning.

9.3 Conclusions

A major conclusion that can be drawn from this study is that the objectives stated earlier in Chapter 1 have been achieved. Several other conclusions can also be drawn based on the research questions and hypotheses stated in chapters 5, 6, 7 and 8, these have been summarised below.

- (a)** It is clear from the environmental evaluation that Kibale has the potential to offer opportunities for recreation and ecotourism. With proper planning and management of visitors, the site and facilities, it is possible that the current level of visits can be sustained without subjecting the Park to substantial environmental degradation.
- (b)** The appraisal of the impact of recreational activities on the camping sites has revealed that the magnitude of impact is still low, although the rate of degradation is higher in the dry season than in the wet season. More ground vegetation seems to be lost in the dry season, resulting in greater area of bare ground and exposure of mineral soil.
- (c)** Both the loop and grid trails are undergoing degradation and about one third of the entire trail system has been moderately eroded. In many places along the trails, tree roots have been exposed as a result of trail erosion.
- (d)** It has also become clear that campsite development and camping has reduced the diversity and composition of woody species in the recreation area.
- (e)** It is evident from the results of the visitor survey that the majority (more than 90%) of visitors to Kibale are from overseas. The number of Ugandans visiting the Park is still very low and consists mainly of school groups on study tour. Most of the visitors are aged between 25 and 44. They learn about Kibale as a place to visit mainly from tour offices and travel guidebooks. More than 90 per cent are first time visitors and the majority (more than 80 per cent) come to view the chimpanzee (*P. troglodytes*). The common feeling among the visitors is that the facilities currently offered at Kibale are of a low standard.

- (f) The relationship between the local communities and the Park is generally good. Though traditional rights of access and use of resources were lost after Kibale became a National Park, local communities still depend on the Park for most of their forest products. About half of the households were aware of ecotourism development in Kibale and expressed support for both conservation and ecotourism. Although the economic benefits are still relatively small and being realised mainly through selling of local produce to the tourists, local communities see ecotourism as a model of economic development.

- (g) The concept of environmental interpretation is little understood in Uganda and the practice is generally poor. The national parks have poor interpretation facilities and the ranger-guides involved in interpretive work have not been trained in interpretation.

9.4 Recommendations for Future Research and Development of Ecotourism in Uganda

The interaction between conservation and ecotourism is a subject of considerable importance in national parks and other protected areas around the world. However, some academics and researchers have expressed the view that the subject is not researchable and sometimes described it as "soft research". This study has proved that research in this area is indeed possible and may actually be much more difficult than in many other fields where methods and techniques of analysis are fairly well established (Obua and Harding, 1996).

In the present study, attempts were made to apply research methodologies developed in the USA, but modified slightly, in order to carry out the environmental evaluation of Kibale National Park. Since the results obtained enabled reasonable

conclusions to be made, it can be concluded that although the methods were developed under temperate environments in the USA, they can be applied satisfactorily in the tropics. However, there is still a need to develop more appropriate research methodologies specifically for use in studies involving conservation and ecotourism. The methods to be developed should take into account the very strong practical objectives of attempting to develop valuable ecotourism opportunities in Uganda, economic benefits for local people, possible involvement of disabled people in the recreational activities, and evaluation of environmental impacts. There appears to be no standard methodology developed for assessing the carrying capacity of recreation environments to date and yet environmental degradation due to high visitor numbers and high use frequency continue to be major site management problems. There is therefore a need to develop research methods that can be used for assessing the impact of recreational activities on the environment and which takes into consideration the number of visitors and frequency of visits. This is important because it has become clear from this study that site degradation does not depend only on the physical attributes such as vegetation and slope.

In the appraisal of the impact of recreational activities on the camping sites and the trails, the study was limited to consideration of the major physical parameters such as slope, tree damage, root exposure, mineral soil increase and vegetation loss. Given the importance of maintaining sound environmental conditions, future studies in this area should focus on the assessment of environmental impact on a much smaller scale. For example, there is a need to examine more closely the effects of trampling on ground vegetation. Hopefully, this should lead to the development of some indices of resistance for the various types of ground vegetation in the recreation areas in Uganda.

Furthermore, there is a need to introduce measures to cope with the increasing numbers of visitors and to minimise environmental degradation in Kibale. This may be done by establishing additional camping sites and/or raising the fees. The latter strategy

may have the effect of reducing the number of visitors. Since it has worked successfully in other national parks, for example Rwanda's Parc National des Volcans (see e.g. Whelan, 1991), it is likely to be effective in Kibale as well as other national parks in the country.

Immediate management intervention is required to control the rate of trail degradation. Sections of the trails where the ground is boggy and soft should be protected from further erosion, for example, by laying duck boards. Simple wooden steps should also be installed at breaks in the slopes and additional drainage provided to reduce muddiness.

It is clear from the findings reported in chapter 6 that there is a demand for decent accommodation. Part of this demand may be met by designing and implementing an accommodation scheme in which local communities provide and manage traditional accommodation units. Simple but decent traditional huts may be constructed for this purpose. Similar programmes have been reported in Senegal (Pearce, 1992), Belize (Edington, 1996), and Indonesia (Cole, 1996). Apart from being environmentally acceptable, the scheme would involve and benefit local communities directly. However, provision of such village accommodation will require clear planning, proper management and control. In this case efforts will be required to ensure that acceptable standards of public health and hygiene are met by the local communities involved in the provision of accommodation.

Since the majority of visitors to Kibale are single persons, future plans to provide more accommodation should look at the possibility of putting up youth hostels. Private individuals or tour operators may be encouraged to invest in this area.

There is a need to adopt a more strategic management approach in order to make ecotourism an attractive economic enterprise in Uganda's protected areas. In Kibale, facilities could be established at Sebitoli where there are plans to open up a second entry point. The facilities could be targeted at the more affluent visitors as is the case in South Africa's eastern Transvaal Lowveld (see e.g. Curzon, 1993)

The use of Park resources by local communities is likely to continue into the foreseeable future. The continued dependence on the Park for forest products suggests that even if heavy restrictions were placed on resource use, local people would most likely not comply. Therefore, the managers of Kibale should devote more attention to managing resource utilisation rather than preventing it. The establishment of a Park Management Advisory Committee (PMAC) has been commendable, but the role of the PMAC in active management of resource utilisation should be clearly defined.

Local people should be involved from the beginning in the planning of any future conservation and development of ecotourism programmes in Uganda. It has been noted from this study that local communities around Kibale were not well informed about the conservation programme and the ecotourism project. It would be important to involve local people in identifying the problems related to conservation and suggesting possible solutions to them during the planning phase of such a programme. Local participation in project design and implementation has been widely reported (see e.g. Paul, 1987) and several recommendations available in literature should be consulted to help in the development of guidelines for local involvement. The major advantage of local involvement is that it serves as an early warning system and helps to avoid decisions that may result in conflicts later.

Local people should be involved more effectively in the management of ecotourism in Uganda, for example, through provision of services such as

accommodation, selling food, handicrafts and souvenirs. In Kibale, the women's gift shop should be stocked with more souvenirs and local handicrafts. Furthermore, the NPWS should explore ways of introducing the American and British models of Farm Hospitality (see e.g. Bryan, 1991 and Harper, 1996) as it provides an additional avenue for local participation in ecotourism management. Those who own large estates (e.g. The Rwenzori Highlands Tea Estate) and large private lands could be encouraged to go into the business. In planning to introduce farm hospitality, sufficient measures would have to be taken to ensure that visitor activities do not conflict with other farm operations.

Finally, there is a need for establishing a national programme of environmental interpretation. Detailed recommendations for the establishment of such a programme have already been given in Chapter 8, but it is important to add that the programme should also provide for local people's participation in interpreting their natural and cultural heritage. Again, the examples reported from Belize by Edington (1996) and by Phillips and Turbridy (1993) would provide useful guidelines on how to implement such a programme. An interpretation programme for school children is also required and should be properly designed so that it is not merely a dilution of the presentation usually aimed at adults. In addition, special programmes catering for the needs of the disabled should also be developed.

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Appendix I

MAKERERE UNIVERSITY, KAMPALA VISITOR SURVEY

PART I: TRAVEL AND DEMOGRAPHIC CHARACTERISTICS

- 1.1 How did you arrive here at Kibale National Park?
Please circle one that applies
- Private car
 - Public bus
 - Private hired bus
 - Tour minibus
 - Taxi
- 1.2 Did you come to this place
- Alone
 - In the company of friends/relatives
 - In a tour package
 - Other (please specify).....
- 1.3 Could you please state the purpose of your visit
- On vacation
 - On business
 - Visiting friends / relatives
 - Other reasons (please specify).....
- 1.4 Is this your first visit to Kibale National Park?
- Yes (Go to Qn. 1.6)
 - No (Go to Qn. 1.5)
- 1.5 If No, when did you last visit this place?
Please write in the space provided below
- 1.6 If Yes, how did you first come to hear about Kibale National Park as a place to visit?
Please tick one that applies
- From Advertisements/Posters/Newspapers
 - From Tourist Information Guidebook
 - Hotel
 - Radio/TV programme
 - Word of mouth-from friends/relatives

6. Other (please specify).....

1.7 Since you were here before, what makes you choose to come back here and not go anywhere else?

Please write your reason in the space below

1.8 Would you say that you were influenced by any publicity material about Kibale National Park - such as leaflets, posters or articles etc. - in making you decide to re-visit?

- a. Yes
- b. No

1.9 Was your visit to Kibale National Park planned before hand, or did you come on local advice?

- a. Planned before hand
- b. Came on local advice

1.10 Which of these would you say was the main reason for your choosing to come to visit Kibale National Park?

Please rank your reasons by putting 1 for the most important reason, 2 for the next, till the fifth

- a. The Wildlife
- b. Tropical setting
- c. Culture and People
- d. Peace and Quiet
- e. The Forest and its Diversity

1.11 How important was the idea of Parks/Protected Areas in your decision to visit Kibale National Park?

Please circle only one

- 1. Main reason
- 2. Important (Influenced decision)
- 3. Somewhat important
- 4. Not important
- 5. Don't Know

1.12 During your visit here, which of the following forms of wildlife interested you most?

- a. Primates (Chimpanzees, Monkeys)
- b. Birds
- c. Butterflies
- d. Trees
- e. Other (please state).....

PART II: ACTIVITIES PARTICIPATION, PREFERENCE AND AREA DESCRIPTION

2.1 What kind of recreational activities did you participate in during your visit here?

Please circle FIVE (5) activities only

- a. Wildlife viewing
- b. Bird watching
- c. Nature walk (observing /collecting plants)
- d. Walking to scenic points
- e. Sitting and enjoying the views
- f. Photography
- g. Camping
- h. Hiking
- i. Fishing
- j. Relaxing
- k. Picnicking
- l. Others (please specify).....

2.2 Which activities did you enjoy most?

Please rank any FIVE (5) by putting 1 for the most enjoyed, 2 for the next, till the fifth

- a. Wildlife viewing
- b. Bird watching
- c. Nature walk (observing/collecting plants)
- d. Walking to scenic points
- e. Sitting and enjoying the views
- f. Photography
- g. Camping
- h. Hiking
- i. Fishing
- j. Relaxing
- k. Picnicking
- l. Others (please specify).....

2.3 What activities would you have liked to participate in if it was possible?

Please write in the space below

2.4 Has your visit to Kibale National Park turned out to be as you expected or are there some ways in which it was different?

Please write your comments in the space below

2.5 What do you think gave you this picture of what it would be like before you came?

Please circle only one

1. Knowledge of other Forests/Forest Parks visited
2. Information from books/magazines
3. Opinions from other people/friends/relatives
4. Printed descriptions (posters, newspapers etc.)
5. Other (please specify).....

2.6 What is your opinion on the facilities provided in this place?

Please circle only ONE figure for each facility

<u>Facility</u>	<u>Very poor</u>	<u>Poor</u>	<u>Satisfactory</u>	<u>Good</u>	<u>Don't Know</u>
a. Toilet	1	2	3	4	0
b. Showers	1	2	3	4	0
c. Car park	1	2	3	4	0
d. Camping site	1	2	3	4	0
e. Map and area information service	1	2	3	4	0
f. Access to the National Park	1	2	3	4	0
g. Litter bins	1	2	3	4	0
h. Water supply	1	2	3	4	0
i. Tables, Benches for picnicking	1	2	3	4	0
j. Fire places	1	2	3	4	0
k. Resting place	1	2	3	4	0
l. Watch tower	1	2	3	4	0
m. Tent shelter	1	2	3	4	0
n. Nature trails	1	2	3	4	0
o. Other (please specify)	1	2	3	4	0

2.7 So on balance would you say that Kibale National Park has been better or worse than you expected it to be?

1. Better
2. Worse

2.8 Do you think you will come here again on a future visit if it were possible?

1. Yes
2. No

- 2.9 Why do you say that?
Please write your comments in the space below
- 2.10 How would you describe your visit to Kibale National Park?
Please circle one only
1. Very Poor
 2. Poor
 3. Ordinary
 4. Good
 5. Excellent
- 2.11 How long have you stayed at the National Park?
Please write the number of Hours or Days stayed in the space below
- 2.12 Where have you been staying during your visit?
1. Paid accomodation (Hotel/Lodge/Guest house)
 2. Tent on campsite
 3. Other (please state).....
- 2.13 Could you please indicate how much you spend per day on:
Please quote to the nearest US\$ (Local visitors quote in Uganda Shs.)
1. Accommodation (Amount.....)
 2. Food and Drinks (Amount.....)
- 2.14 Are there any improvements or developments you would like to see at Kibale National Park?
Please write your suggestion in the space provided below

PART III: SOCIO-ECONOMIC CHARACTERISTICS

To conclude, could you please give us a little more information about yourself to help us classify the results.

3.1 What is your Country and Nationality?

a. Country

b. Nationality

3.2 Could you please indicate your age category and sex in the table below
Please tick the correct box

Age (years)	Male	Female
a. 15-24		
b. 25-44		
c. 45-65		
d. Over 65		

3.3 How many people in your company, including yourself, are in each of the following age and sex categories ?

Please write the number in the appropriate box in the table below

Age (years)	Male	Female
a. 5-14		
b. 15-24		
c. 25-44		
d. 45-65		
e. Over 65		

3.4 What is your marital status?

- a. Married
- b. Single
- c. Divorced/Separated
- d. Widowed

3.5 What is the highest level of education you have attained?

- a. Self-taught
- b. Primary school
- c. Secondary school
- d. College/Institute/Polytechnic
- e. University

3.6 Now we want to know about your work. Are you.....

- a. Government employed
- b. Self employed
- c. Employed in the private sector
- d. Retired
- e. A housewife
- f. A student
- g. Unemployed
- h. Other (please specify)

3.7 What is your main occupation?

- a. Professional/Technical
- b. Administrative/Execcutive/Management
- c. Clerical work
- d. Service work/Armed forces
- e. Sales work/Business
- f. Housewife
- g. Other (please specify)

3.8 Finally, could you please indicate your monthly income in any of the following categories to the nearest US\$ (Local visitors indicate in Ug. Shs.)

<u>Foreign visitors (US\$)</u>	<u>Local visitors (Ug. Shs.)</u>
a. 500-1500	a. 10,000-50,000
b. 1501-2000	b. 51,000-100,000
c. 2001-5000	c. 101,000-200,000
d. Over 5000	d. Over 200,000

May we assure you that all the information you have given us will be treated in the strictest confidence.

THANK YOU VERY MUCH FOR YOUR HELP.

Appendix II

SURVEY OF LOCAL PERCEPTION AND ATTITUDES TOWARD CONSERVATION AND ECOTOURISM DEVELOPMENT IN KIBALE

SECTION I: DEMOGRAPHIC CHARACTERISTICS

- 1.1 Head of household: Male/Female
- 1.2 Number of children:
- 1.3 Present occupation:
- 1.4 Total number of people in the household:

SECTION 2: NATIONAL PARK RESOURCE USE

- 2.1 Is there enough firewood in this area for your requirements?
Tick one only
 - (a) Very little []
 - (b) Little []
 - (c) Just enough []
 - (d) Plenty []
- 2.2 How long does it take to collect one load of firewood?
- 2.3 How long does such a load of firewood last your family?
- 2.4 What is the approximate distance of the place from where you collected firewood last?
- 2.5 Is the firewood which you have in your house from your own land?
- 2.6 If it is not from your own land, where did you get it from?
- 2.7 Are there enough trees to provide you with your building poles requirements in this area?
- 2.8 What species do you use as building poles?
- 2.9 Where do you obtain them from?

- 2.10 If you were to construct a house, would you get enough of those species?
- 2.11 If you were to buy building poles to construct a house, how much would it cost you?
- 2.12 Do you look after trees growing on your land or do you leave them to survive naturally?
- 2.13 How do you get timber for making doors, windows and furniture?
- 2.14 What tree species in the national park or elsewhere do you find suitable for providing sawn timber?

SECTION 3: VALUE OF THE NATIONAL PARK

- 3.1 When did you last eat wild animal meat?
- 3.2 What type of animal did it come from?
- 3.3 What type of forest birds are hunted in this area?
- 3.4 In the last ten years, have you made use of the national park for any of these things?

Tick the answer

- a. Honey
- b. Mushrooms
- c. Wild fruits
- d. Wild vegetables
- e. Medicines
- f. Firewood
- g. Charcoal
- h. Building poles
- i. Sawn timber
- j. Bamboo
- k. Cultivation
- l. Fishing
- m. Hunting
- n. Passage to neighbouring locality

- o. Grazing
- P. Other

3.5 In what ways do animals from the national park help you?

- a. Provision of meat
- b. Provision of skins
- c. Provision of medicines
- d. Controlling number of others which might become pests
- e. Other (specify)

3.6 Do animals living in the national park harm you in any of the following ways?

- a. Transmitting diseases
- b. Damaging crops
- c. Killing livestock animals
- d. Attacking people
- e. Other (specify)

3.7 Do you think wild animals should be protected? Give your reasons for or against.

SECTION 4: PARK CONSERVATION AND MANAGEMENT

4.1 Why do you think government decided to set aside the Kibale National Park?

4.2 Since the Kibale Forest Reserve became a National Park, which of the following things are you not allowed to do freely ?

- a. Collect firewood
- b. Collect building poles
- c. Collect bamboo
- d. Carry out pit-sawing
- e. Collect medicine
- f. Collect fruits, vegetables, mushrooms, honey

- g. Make beehives from forest trees and keep bees
- h. Hunt wild animals
- i. Walk through the national park
- j. Graze livestock
- k. Cultivate crops
- l. Other (specify)

4.3 Have you ever cultivated land inside the national park?

YES / NO

4.4 If yes, did you obtain the land yourself or you were allocated by someone ?

4.5 People were evicted from the national park a few years ago, do you think those who had cultivation plots inside the park should have been:

- a. allowed to continue cultivating freely
- b. allowed to build and settle in the park
- c. allowed to cultivate specified areas with a cultivation permit
- d. evicted all the same
- e. Other reason (specify)

4.6 What do you think the government should do with parts of the national park which were cultivated in the past?

- a. Degazette some of the park land
- b. Replant the cultivation plots with useful trees
- c. Allow villagers to plant trees while cultivating the plots temporarily
- d. Leave the forest to natural regeneration
- e. Other reason (specify)

4.7 If you were asked to help protect and manage the national park, would you be willing to do the following things?

- a. Plant more trees in the park
- b. Clear the fire lines
- c. Maintain roads and paths leading to the park
- d. Report illegal pit-sawyers and charcoal burners
- e. Clear the park boundaries
- f. Fight the fires

SECTION 5: LOCAL PERCEPTION OF TOURISM IN KIBALE

- 5.1 Do you see tourists coming to this area? YES / NO
- 5.2 What do you think they come to do?
- 5.3 Have you ever given any assistance to any tourist, if yes, what kind of assistance?
- 5.4 Have you done any work for a tourist, if yes, what kind of work?
- 5.5 Have you ever been employed by the National Park authority to do any work connected with tourism at Kibale, if yes, what kind of work?
- 5.6 Do you benefit from tourists, if yes, in what way?
- 5.7 Do tourists buy any of your local produce, if yes, what do they buy?
- 5.8 What do you think will happen when the number of tourists increases?
- 5.9 Do you think tourists should be encouraged to come and visit your area? Give your reason for or against.
- 5.10 Which of the following government services do you think has improved since the introduction of tourism in Kibale? ***Tick all that apply***
- a. Agricultural/livestock extension
 - b. Forest extension
 - c. Road maintenance
 - d. Health services (dispensary/health centre)
 - e. Educational services (better/new schools)

Appendix III

QUESTIONNAIRE SEI/1: SURVEY OF THE STATUS OF ENVIRONMENTAL INTERPRETATION IN UGANDA

1. Title of Officer
2. Job description
3. Name of organisation/department
4. If you were to employ an Environmental Interpreter, what qualities would you look for in that person?
Please tick and rank in order of priority
 - (i). A knowledge and understanding of man-made and natural environments []
 - (ii). A knowledge and understanding related to human behaviour (psychology, anthropology etc) []
 - (iii). The ability to use various communication skills and techniques (including fluency in speaking and writing, expressive arts etc.) []
 - (iv). Practical experience with and use of interpretive materials and methods []
 - (v). Experience in the presentation of interpretive plans, including budgets, work programmes, schedules etc. []
 - (vi). A knowledge and understanding of resource management and conservation []
 - (vii). The ability to lead, motivate and counsel staff []
 - (viii). The ability to pursue a concept through from its inception to its implementation []
 - (ix). Other (please state)..... []
5. Has your Organisation/Department got clearly stated objectives on interpretation?
YES [] NO []
6. If YES, could you state those objectives

7. Do you consider that interpretation occupies its rightful status in the Organisation/Department?

YES [] NO []

8. If NO, what is the reason for that?

9. Do you envisage increased use of interpretation?

YES [] NO []

10. Are adequate facilities available for effective interpretation in your agency?

YES [] NO []

11. What facilities are in use at the moment for interpretative work?

Please list them below

12. Now we would like to ascertain who is involved in interpretation in your Organisation/Department together with the type and extent of their involvement. Please indicate those persons with interpretation as a significant feature of their work. A key is provided below the table to assist the definition of their role.

In the last column indicate the average No. of Hrs. per week used for interpretation

<u>Name</u>	<u>Sex</u> (M/F)	<u>Interpretive</u> <u>role(s)*</u>	<u>Job title</u>	<u>Hours</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10				

* Examples of Interpretive role(s):

- (a) Management/ Planning
- (b) Field personnel e.g. Ranger, Guard, Tour-guide etc.
- (c) Writing publications, brochures, leaflets etc.
- (d) Designing exhibits
- (e) Administration
- (f) Research
- (g) Other (you can specify)

13. What are the management skills you would expect the Interpretation staff in your organisation/department to have?

Please indicate with a tick

- a. A knowledge of Law []
- b. Budgeting and financial control []
- c. Planning and development []
- d. Evaluation of programmes and personnel []
- e. Training staff []
- f. Delegation of duties []
- g. Communication verbally and in writing []
- h. Co-ordination []
- i. Advice and counselling []
- j. Supervision of work and personnel []
- k. Handling the public []
- l. Research []
- m. Other (please specify)

THANK YOU VERY MUCH FOR YOUR ASSISTANCE

Appendix IV

QUESTIONNAIRE SEI/2: SURVEY OF THE STATUS OF ENVIRONMENTAL INTERPRETATION IN UGANDA

Please write, mark, tick or delete as necessary the appropriate answer to the questions below

PART 1: YOUR WORK AND TRAINING

- 1.1 What is your present job title?
- 1.2 Describe your job very briefly in the space provided below
- 1.3 Who is your employer?
- 1.4 How many years have you been in this post?
- 1.5 How many years have you been involved in interpretation work?
Please tick the appropriate box
- | | |
|------------------|-----|
| a. 0 - 2 years | [] |
| b. 3 - 5 years | [] |
| c. 6 - 10 years | [] |
| d. Over 10 years | [] |
- 1.6 What is your educational background?
- | <u>Level</u> | <u>Course(s) done</u> | <u>Qualification</u> |
|--------------------------|-----------------------|----------------------|
| a. Secondary school | | |
| b. Technical College | | |
| c. University | | |
| d. Other (please state) | | |
- 1.7 If you are a member of any professional society, please indicate the society
- 1.8 Have you attended any in-service training courses on interpretation, if yes, state the course(s) and the year attended

Course: Year :

Course: Year:

1.9 Do you have any reading materials to keep you up-to-date with the theory and practice of interpretation, if yes, please indicate some of those materials

1.10 Are you employed full-time on interpretation or it is part of your job?

Full-time [] Part of the job []

1.11 If "part of the job" please estimate the number of hours (on average) per week you are engaged in interpretation?

(a) 0 -8 hours []

(b) 9 - 24 hours []

(c) 25 - 40 hours []

1.12 Tick those areas of your present involvement in interpretation

a. Giving talks to visitors/tourists []

b. Field guide []

c. Exhibit design and display []

d. Participating in policy making through meetings etc. []

e. Participating in planning interpretation []

f. Administration and co-ordination of interpretation work []

g. Training other staff in interpretation work []

h. Monitoring and evaluation of interpretation work in the department/organisation []

i. Participating in research activities []

j. Other (please specify) []

PART 2: ANALYSIS OF YOUR JOB

2.1 Which of the following are the requirements for your job?
Please tick the appropriate box

- a. Knowledge of environmental conservation/natural resource protection []
- b. Knowledge of wildlife ecology and management []
- c. Knowledge of local culture []
- d. Knowledge of forestry []
- e. Knowledge of tourism management []
- f. Knowledge of Law []
- g. Ability to handle the public []
- h. Knowledge of local history and geography []

2.2 What qualities do you think you require as an interpreter?

2.3 If you were to employ another person to assist with interpretation, what qualities would you look for in that person?

- (i). A knowledge and understanding of man-made and natural environments []
- (ii). A knowledge and understanding related to human behaviour (psychology, anthropology, etc.) []
- (iii). The ability to use various communicative skills and techniques (including spoken and written word, expressive arts, etc.) []
- (iv). Practical experience with and use of interpretive materials and methods []
- (v). Experience in the preparation of interpretive plans including budgets, work programmes, schedules, etc.) []
- (vi). A knowledge and understanding of natural resource management and conservation []
- (vii). The ability to lead, motivate and counsel other junior staff []
- (viii). The ability to understand a concept (e.g. resource conservation) and to pursue it from its inception to the end []
- (ix). Other (please specify)

2.4 What factors motivated you to take up your present position?

Please tick the appropriate answer

- a. Employment opportunity []
- b. Environmental concern []
- c. To further my involvement with nature []
- d. To work with people []
- e. Higher salary []
- f. Personal challenge []
- g. No particular reason []
- h. Other reason (please specify) []

2.5 Has your employer got clearly stated interpretive objectives to guide your work?

YES [] NO []

2.6 If YES, are you able to influence those objectives?

YES [] NO []

2.7 In what way would you influence those objectives?

2.8 Does interpretation receive its rightful status in the Organisation/Department?

YES [] NO []

2.9 Do you have enough facilities/ resources for effective interpretation?

YES [] NO []

2.10 If NO, please suggest what you would require to improve your work

2.11 In which of the following categories does your monthly salary (Ug. Shs.) belong?

- 10,000 - 20,000 []
- 21,000 - 30,000 []
- 31,000 - 40,000 []
- 41,000 - 50,000 []
- Over 50,000 []

THANK YOU FOR YOUR CO-OPERATION