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Park resources use and user attitudes towards conservation in Kibale National Park, western Uganda

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Abstract

Two hundred households were interviewed in four parishes surrounding Kibale National Park to determine their perception of the park's value and attitude toward conservation. Local communities generally have a poor perception of the existence and value of the park but they support conservation. They continue to depend on forest products despite losing much of their traditional rights of access and use of the forest resources due to strict park law enforcement. Their crops are damaged by elephants, bush pigs and baboons but they are not compensated. Involvement of local people directly in the management and conservation of the park's resources may be critical for its viability.

Key words: Conservation, resource use, local communities, national park, collaborative management

Introduction

Kibale National Park is located in western Uganda between 0° 13' - 0° 41' N and 30° 19' - 30° 32' E. It covers an area of about 560 km² of which 350 km² is natural forest and 210 km² is grasslands and swamps (van Orsdol, 1986). According to local oral accounts, Kibale forest was inhabited by a group of cattle keepers between 1900 and 1925, but an out break of rinderpest in 1925 killed most of the animals and some people were forced to settle elsewhere. Kibale forest was gazetted a crown forest and placed under the care of the Uganda Forest Department in 1932 (Forest Department, 1995). 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 crops. However, the local population living in the neighbourhood continued to depend on the forest for firewood, building poles, ropes medicines and bush meat. In 1948 Kibale forest was re-gazetted as a Central Forest Reserve and the boundaries demarcated (Forest Department, 1995). 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 south-western Uganda, settling in the grassland areas to the west of the forest reserve. But as the population increased, 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 the 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 former 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. In July 1992, Kibale Forest Reserve was declared a Forest Park and in November 1993 it was made a National Park (Edromag, 1993). since then, great emphasis has been put on the conservation of forest resources.

Bright and Manfredo (1995) have noted that one of the best ways of learning about the human dimension of natural resource management is to assess the attitudes of the public towards the resource. In this way, resource managers are able to understand the diverse sides of issues relating to resource use, conservation and management. In recent years, several strategies have been developed aimed at reducing local community dependence on resources especially in protected areas and one of the most common approaches has been the introduction of community based or collaborative resource management programmes (Akama et al., 1995). It has been argued by Jusof and Majid (1995) that collaborative resource management is only practicable when local communities have positive attitudes towards the resource (see also Myers, 1972; Mackinnon et al., 1986; Bunnet, 1990; IUCN, 1992; Nepal and Weber, 1995 and Child, 1996). In Uganda there have several initiatives aimed at involving local communities in resource conservation and management in protected areas, but most of them are still

in the trial stages (Reid, 1993 and Scott, 1993).

In Kibale National Park, a proposed joint park management programme has stalled partly because of the uncertainties about the local communities' support for the programme and there are several reasons for this. Firstly, and as noted above, over 900 households were evicted from the park a few years ago (Howard, 1991). As a result the families that were directly affected plus several others that sympathised with them have remained very bitter about the evictions and there are reports that they resent the proposed joint park management programme (A. Mugisa, 1995 personal communication). Secondly, the local communities have gradually lost their traditional use rights due to strict park law enforcement from the time Kibale was declared a national park. Despite these problems the programme still holds, but the important point to note is that successful conservation and management of Kibale National Park will depend upon the support of local communities. However, local community support and participation in forest/park management needs to be planned within a wider framework of forest resource conservation and management. In this respect, sufficient information about forest resource use and local communities' attitudes to conservation is essential. This study has attempted to provide such information to aid the decision making process and management planning in Kibale National Park.

Methodology

Household interviews

The direct interview method (de Vaus, 1985) was used to collect information and it was chosen for two main reasons. Firstly, the method is flexible and enables the interviewer to ensure that the respondent fully understands the nature of the information being sought, and can probe more deeply into the responses. Secondly, the interviewer can establish rapport with respondents thereby maintaining the respondents' interests and participation in the exercise. According to de Vaus (1985), direct interviews make it possible for interviewers to clarify meanings and purpose of particular questions. As a result the interviewer can obtain more accurate information than would be forthcoming from other survey methods. The interviews were conducted between October 1994 and June 1995 in the villages that either directly bordered the park or were very close (less than 5 km from the park boundary).

During the interviews, respondents were asked to give information on:

- where they obtained firewood, building poles and sawn timber;
- the wild animals and birds commonly hunted in their areas for bush meat;
- why they thought the government decided to establish Kibale National Park;
- whether they had ever cultivated land in the forest/park
- whether the existence of the forest/park was harmful to them in any way, e.g. damage of crops;
- whether they thought the animals in the park should be protected;
- whether part of the park should be de-gazetted and given to the people for cultivation and settlement; and
- whether the cultivated plots in the park should be planted with indigenous trees or left to natural regeneration.

Stratification and selection of study parishes

With the assistance of the Park Wardens, parishes surrounding the park were grouped into four strata based upon the problem of crop damage by wildlife and evictions from the park. It was felt that these issues were likely to have significant influence on the local people's perception of park existence and value and attitudes towards conservation. Based on these criteria and also considering the problem of poor access to the very remote villages, the following parishes (Figure 1) were selected from each stratum:

- Bigodi - moderate crop raiding and few families evicted from the park
- Isunga - high rate of crop raiding and several families evicted from the park
- Kiko - high rate of crop raiding and few families evicted from the park
- Mbale - moderate crop raiding and no family evicted from the park.

Selection of sample size and sampling procedure

It was inferred from Reid's (1993) report that local communities living about 5 km from the forest edge were directly affecting or were affected by the park. As a result, the study was confined to parishes bordering the park. Guidelines recommended by Nichols (1991) on the selection of sample sizes were followed and a sample size of 200 households was selected. Fifty households were interviewed in each parish and a simple random/systematic sampling technique was used (de Vaus, 1985). The technique was adopted because the villages did not have tax registers which usually helps in the selection of households in such a study. In each parish, the first household was selected at random and interviewed. The interviews then proceeded by selecting every second homestead encountered along the foot paths leading into the villages.

Results and discussion

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 crop damage by wildlife, evictions from the park and forest/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.

Park resource use

Local communities in Kibale depend on the park for firewood, building poles, and sawn timber despite strict park regulations on resource use (Table 1). Of the 23 species listed as suitable for building poles, *Milletia dura*,

Bridelia micrantha, *Phoenix reclinata*, *Markhamia lutea* and *Diospyroos abyssinica* were the most favoured (Table 1). This suggests that when implementing the proposed collaborative park management and resource conservation programme, it would be necessary to assess the stocking density and to monitor the species being extracted as they are likely to diminish over time due to frequent use and lack of alternative sources of building poles. Though 91% of the many respondents denied felling trees in the park for sawn timber for fear of being victimised for illegal pit sawing, there were planks of newly sawn timber from *Olea welwtischii*, *Lovoa swynertonii*, and *Entandrophragma spp* in 156 homes. These species had earlier been reported by Howard (1991) as endangered in Kibale. Continued exploitation by illegal pit sawyers therefore justifies the need for urgent conservation measures to be carried out to protect these species.

The animals commonly hunted for bush meat were bush pigs (*Potamochoerus porcus*), buffalo (*Syncerus caffer*) bush buck (*Tragelaphus scriptus*), red duiker (*Cephalophus harveyi*), sitatunga (*Tragelaphus spekeii*) and giant forest hog (*Hylochoerus meinertzhagenii*)(Figure 2a). The birds commonly hunted for meat were the red dove (*Columba spp*), francolin (*Francolinus spp*) and guinea fowl (*Guterra edouardi*) (Figure 2b). Again these birds and animals need to be protected in any future conservation programme. Apart from bush meat, 50% of the households said they also obtain medicines and skins for making drums from the animals, for example there were claims that extracts from the intestines of bush pigs (*P. Porcus*) were used for treating different kinds of abdominal problems.

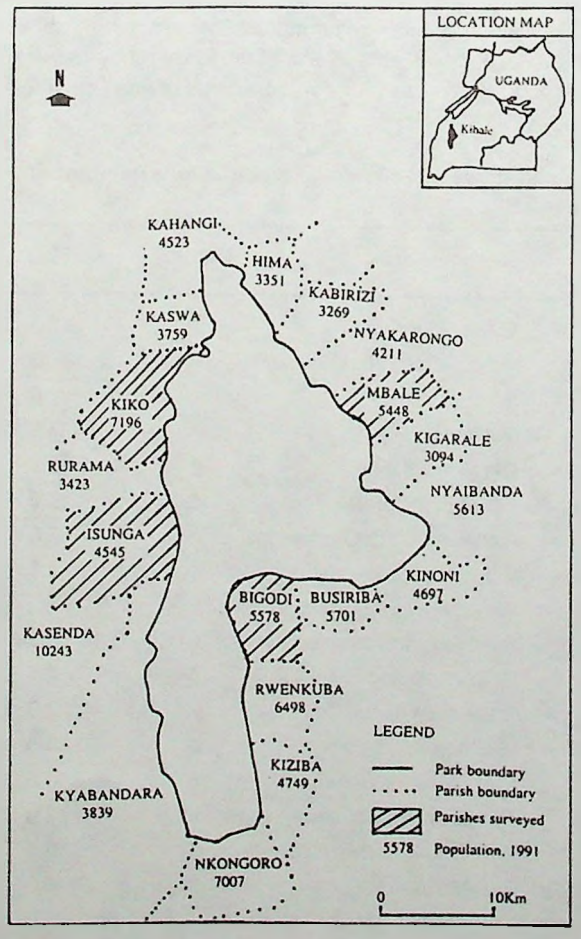


Figure 1. Map of Kibale National Park and parishes surrounding it. The study areas are shaded.

Attitudes on park existence and conservation

Twenty nine percent of the respondents said that Kibale national park was established in order to protect the wildlife. Almost as many (27.5%) said the park was established because government wanted to develop tourism in Kibale, and 25% had no idea. At the same time 19.5% said the forest was important because it attracted rainfall. Thus, although 75% were aware of the existence of the forest/park and understood its importance, 25% had only a vague idea.

Knowledge about park conservation was better than awareness of park existence. The majority (89%) indicated that the forest/park should be protected whilst 11% said if the forest was destroyed there would be more land for cultivation and settlement. The latter answer, though held by a minority, needs to be taken seriously because it raises two issues of concern. Firstly, it shows how some people living around Kibale National Park are little informed about the value of the forest/park. Secondly, it reveals how ineffective Kibale National Park's community outreach programme is. The responses pose some danger to conservation and also indicates that some difficulties would be met when implementing the proposed collaborative park management programme. In Isunga parish, it became clear that land scarcity and eviction of some families from the park a few years ago have resulted in negative attitudes towards the forest/park and it is likely that the programme may be resented.

Other problems likely to arise are the uncontrolled exploitation of the park's resources and the inability of local communities to transmit knowledge about the park to future generations. It is possible that in the long run the importance that local communities attach to the park will diminish and conservation of resources will be neglected. At the same time local community opinions differed on the need to protect wildlife. Twenty percent of the respondents said the wildlife should not be protected because they would increase in number and become more destructive. Two thirds said the wildlife should be protected and 13% had no idea. These reasons clearly show that there are people around Kibale National Park who support wildlife conservation.

Management of park areas degraded by cultivation

Two thirds disagreed with the idea of de-gazetting part of the park for settlement and cultivation. In Bigodi parish, 96% of the households rejected the idea. Nonetheless, there were surprising responses in Isunga where, despite having the highest number of families evicted from the park, only 34% supported de-gazetting the forest. Eighty percent said the plots cultivated in the past should be planted with indigenous trees and a further one third proposed that the taungya system should be introduced so that trees can grow alongside the agricultural crops. Half disagreed with the

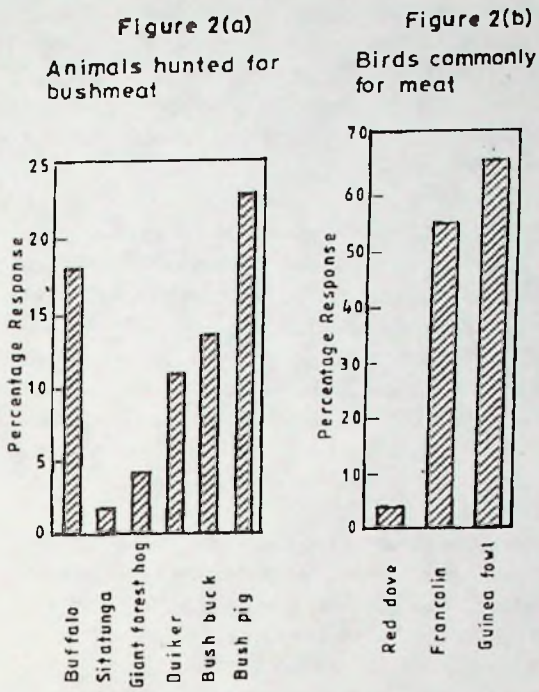


Figure 2. Percentage response to question on wild animals and birds being hunted for bushmeat in Kibale National Park (N=200)

idea of leaving the plots to natural regeneration. Analysis of variance (Table 2) shows that these opinions were significantly different between parishes.

As noted by Bright and Manfredo (1995), public opinions are essential for successful implementation of policies regarding natural resource use and management. The different opinions expressed by the local people in Kibale have important policy implications for future management of the park because they indicate that local communities may react differently to new management interventions.

Crop damage and other problems

Crop damage by wildlife was reported in all the four parishes mainly by elephants (*Loxodonta africana*), bush pigs (*P. porcus*), baboons (*P. anubis*) and monkeys. Nearly all respondents (97%) said crop damage was the most serious wildlife problem. Thirty eight per cent claimed that wild animals also transmitted some diseases to human beings and livestock. They said buffalos (*S. caffer*) carried tsetse flies which cause sleeping sickness in humans and nagana in livestock. They also claimed that baboons (*P. anubis*) killed poultry and young goats. Fifty percent claimed that the red colobus monkey (*C. baduis tephrosceles*) teased women and attacked children.

Conclusions and recommendations

It is clear that local communities living around Kibale National Park still obtain most of the forest products from the park. Harvesting of fire wood, cutting of building poles

Table 1. Tree species used as firewood and building poles and those mentioned as suitable for sawn timber by local communities living around Kibale National Park (N=200)

Tree species	Use	%	Tree species	Use	%
Albizia spp	*+	3.5	*Milletia dura*	*	17.5
Bridelia micrantha	*+	15.0	*Mitragyna rubrostipulata*	+	2.5
Blighia spp	*+	3.8	*Morus lactea*	+	1.0
Chrysophyllum albidum	*+	1.0	*Newtonia buchananii*	+	3.5
Cordia millenii	+	22.0	*Olea welwitschii*	+	20.5
Croton spp	*+	0.5	*Phoenix reclinata*	*	19.5
Dasylepis spp	*	0.5	*Piptadeniastrum africanum*	+	6.0
Diospyros abyssinica	*	10.0	*Polyscias fulva*	+	6.5
**Eucalyptus* spp	*	67.5	*Premna angolensis*	+	1.5
Entandrophragma spp	+	33.0	*Pseudospondias microcarpa*	+	6.5
Fagara spp	*+	15.0	*Rothmania* spp	*	1.5
Ficus spp	+	0.75	*Sapium ellipticum*	*+	2.0
Funtumia africana	*+	7.0	**Sena spectabilis*	*	20.5
Harrisonia abyssinica	*	2.0	*Strombosia schefleri*	+	0.5
Lovoa swynertonii	+	31.0	*Symphonia globulifera*	+	1.0
Macaranga spp	*	1.5	*Tabernaemontana* spp	*	0.5
Maesopsis eminii	*	0.5	*Teclea nobilis*	*	4.0
Markhamia lutea	*	38.5	*Turraea floribunda*	*	2.0
Milicia excelsa	+	7.0	*Uvariopsis congensis*	*	3.0

*=Non-forest species *=species used as building poles +=species used for sawn timber

Table 2. 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, Don't know=0 (N=200)

Statements	Bigodi	Isunga	Kiko	Mbale	P.Std	F	P
De-gazette part of the forest	1.96	1.66	1.78	1.42	0.42	14.3	**
Replant cultivated plots	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 to natural regeneration	1.02	1.76	1.66	1.06	0.35	61.53	**

P.Std= Pooled standard deviation *Significant at $P \leq 0.05$ **Significant at $P \leq 0.01$

and sawing of timber are the most common forest exploitation activities. Over time, harvesting of forest products, illegal pit sawing and hunting will undermine conservation efforts.

Local communities are little informed about the importance of Kibale National Park's existence. This will present an additional problem for conservation because it implies that local communities will not easily perceive the need to protect the park's resources. Although some people supported the idea of protecting wildlife for the benefit of future generations, others had a very poor understanding of the park's value.

With these in mind, the following recommendations were advanced:

a. With an average of nine persons per household and a population growth rate of 3.29% per annum (Ministry of Finance and Economic Development, 1995), the local population around the park is likely to increase tremendously in the next few years and much greater pressure will be exerted on the park's resources. There is therefore a need to regulate the exploitation of resources by confining resource use in well demarcated community use zones.

b. The problem of illegal park resource use can be reduced by a combination of strict park law enforcement and community education and not just the former. This calls for increased education of local communities about the existence and value of the park.

c. Compensation for crop damage is an option that the managers of the park should explore if local support for conservation is to be maintained. Sherman and Dixon (1991) have indicated that in many protected areas compensation for crop damage has helped to maintain favourable community attitudes towards wildlife conservation because crop damage is the cost that conservation often passes onto local communities.

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(ii) For periodicals.
Bekunda, M.A., Smethurst, P.J., Khanna, P.K. and Willet, J.R., 1990. Effects of post-harvest residue management on labile soil phosphorus in a *Pinus radiator* Plantation, *Forest Ecology and Management*, 38:13-25.
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e) Equations should be numbered serially at the right-hand side in parentheses. In general only equations explicitly denoted by exp.

f) The use of fractional powers instead of root signs is recommended. Also powers of e are often more conveniently denoted by exp.

g) Levels of statistical significance which can be mentioned without further explanation are $*p<0.05$, $**p<0.001$ and $***p<0.001$.

h) In chemical formulae, valence of ions should be given as e.g. Mg^{2+} and SO_4^{2-}, not as Mg^{++} or SO_4^{--}.

i) Isotope numbers should precede the symbols, e.g. ^{14}C.

j) The repeated writing of chemical formulea in the text is to be avoided where reasonably possible; instead, the name of the compound should be given in full. Exceptions may be made in the case of a very long name occurring very frequently or in the case of a compound being described as the end product of a gravimetric determination (e.g. phosphate as P_2O_5.

k) Use e.g. kg ha^{-1} instead of kg/ha, etc.

10. Nomenclature

a) With the exception of common domestic animals, identify all biotica (crops, plants, insects, birds, mammals, etc.) by their scientific names when the English term is first used.

b) All biocides and other organic compounds must be identified by their Geneva names when first used in the text. Active ingredients of all formulations should be likewise identified.

c) For chemical nomenclature, the conventions of the International Union of Pure and Applied Chemistry and the official recommendations of the IUPAC-IUB Combined Commission on Biochemical Nomenclature should be followed.

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