KAPKWAI FOREST AND ITS USERS

A Site Report prepared for presentation to the local people and officials of Kapkwai forest- Mt Elgon National Park

BY

UFRI RESEARCH TEAM

Research Note Number 9, 1999

Uganda Forestry Resources and Institutions centre (UFRIC)

An IFRI Collaborating Research Centre

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Members of the Makerere University
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Introduction

Kapkwai forest is a part of the Mount Elgon forest ecosystem. It is also part of Mt. Elgon National Park, located 10km northwest of Kapchorwa town. Ket-ankenge is one of the settlements around Kapkwai forest selected for the study.

The History of Ket-ankenge Settlement of Kapkwai Forest

The history of Ket-akenge settlement is not clear. The oldest member of the settlement dated it as far back as the 1880s when the white people came to Uganda. It is alleged that the ancestors of Ket-akenge settlement have their origins in Kenya where they were cattle keepers and lived along lake Turkana. Due to increased civil wars and cattle rustling, however, most cattle owners moved southwestwards and settled in Tororo in eastern Uganda in the last decade of the 18th century. This respondent claimed that his grand parents were born in Tororo but later moved to Mbale due to civil war. The population in Mbale soon increased as a result of increased migration and natural population growth, and so the people moved farther northeast. They finally settled in present day Kapchorwa district.

Being cattle keepers, the migrants initially settled in the lowlands which had plenty of grass for their animals. Cattle raiding between the Pokot of Kenya and the Karamojong of Uganda intensified and extended to the plains around Kapchorwa. As a result, cattle owners in Kapchorwa moved from the lowlands to Kapkwai, one of the ridges of Mt Elgon at the outskirts of then Mt. Elgon Forest Reserve. The thick forest was inhabited by many wild animals such as leopards, elephants, buffalos, antelopes, foxes, and hyenas. The lack of good pasture, however, forced the settlers to shift from cattle keeping to cultivation. They cleared more forest for agriculture, thanks to the favourable climate. Mt Elgon Forest Reserve was gazetted in 1936, putting an end to forest encroachment.

During forest clearing, one big tree around which the present trading centre of the settlement was established was left in the field. It was from this tree that the settlement derived its name Ket-akenge, which means "one tree settlement." By the mid 1980s the number of households in the settlement had grown to 20 and close to 100 by the early 1990s. Improved access to the settlement with fairly good roads contributed to the rapid increase in population. In 1993, the settlement was split into two, Ket-akenge and Kamiro. Today each of the two settlements has about fifty households and a population of about three hundred people.

The people of Ket-akenge settlement are of two main ethnic groups: the majority Sabiny (over 60% of the population) and the Bagisu. The major economic activity is farming—growing mainly maize, coffee, wheat, beans and Irish potatoes for commercial purposes, and millet, yams, and bananas for subsistence. The soils in the settlement are fertile and the climate ideal for farming. Farmers mainly use ox-ploughs but a few use a tractor owned by the richest member of the settlement. There is a ready market in the neighbouring Kenya and other districts of Uganda for the food crops produced in the settlement.

In addition to agricultural crops, farmers keep cattle (an average of three animals per household), pigs, donkeys, and goats. Increased household income from the sale of agricultural produce has also enabled the construction of permanent and semi-permanent houses in the settlement. The average land holding per household is about one hectare.

Mt. Elgon National Park

Mount Elgon National Park covers over 1145 km^2 and is contiguous with an area of about 900 km^2 across the international boundary with Kenya. With an altitudinal range of 1460 to 4320 metres above sea level, the forest may be broadly classified into four categories occupying different altitudinal zones. These are a mixed montane forest below 2500 metres, bamboo and low canopy montane forest located 2,500 to 3,000 metres, a high montane heath located above 3500 metres.

In 1990 the Mt Elgon Forest Reserve was managed as a Forest Park. Later in 1995, its conservation status was elevated to a National Park. New rules pertaining to the access and use of the forest resources were created. For example timber harvesting, grazing of animals, and hunting were banned. Removal of non-timber forest products such as bamboo stems, shoots, and fuelwood for subsistence use was also restricted. A 20-metre wide strip of *Eucalyptus grandis* trees was planted as a boundary marker between the settlement and the national park.

The Chronology of Events in Ket-akenge Settlement

1880 - 1899	Coming of the white people to Uganda and to the settlement area; cattle rustling intensifies in Turkanaland in Kenya, forcing the settlers to move towards Tororo in Uganda.
1900 - 1916	Migrants settle in Tororo; population increase and civil wars in Tororo force migrants to move towards Mbale.
1917	The first settlers arrive at Kapkwai.
1936	The gazetting of Mt. Elgon forest reserve.
1960 - 1980	Increased cattle rustling/raiding in Karamoja and Sebei area; increased migration leading to increased population; starting of cultivation inside the forest reserve.
1987	Cultivation in the forest reserve prohibited.
1990	Gazetting of Mt Elgon Forest Park.
1993	Subdividing of Kapkwai settlement into Ket-akenge and Kamiro settlements.
1995	Gazetting of Mt Elgon National Park.

User Groups and Forest Products

Despite being a national park, Kapkwai forest is extensively used by the people living in the adjacent settlements. The forest is a source of fuelwood, bamboo poles, bamboo shoots, mushrooms, medicinal plants, vegetables, water, and salt licks for cattle and goats. Until 1995, the forest was also used for grazing although illegal grazing still

takes place.

Because of limited communal grazing areas, animals are grazed in court yards and on land under fallow. Animals also feed on banana stems, maize leaves during the growing season and maize stalks after harvesting. There is a lot of water available in the settlement from Chekororo spring and Cheptoi river which originates from the nearby forest. The soils in the settlement are volcanic and very fertile. However, because of their porosity, they are not suitable for house construction

Several people use the forest for subsistence. Harvesters of the forest resources include fire wood collectors, bamboo stem harvesters, bamboo shoot harvesters, mushroom harvesters, medicinal plant collectors, pole harvesters, grazers, and honey collectors (See Appendix 1). The most important user-groups are firewood collectors, bamboo stem and medicinal plant harvesters.

Firewood collectors

This user group is composed of women, girls and boys below 13 years of age. The forest is the only source of firewood in the settlement. This is due to the fact that there are no woodlots in the settlements and no on-farm trees. The user group was estimated at 235 individuals, of whom about 100 are female children and 50 male. As many as thirty members of the user group collect firewood daily. Most female adults carry the wood on their backs while children carry on their heads. A back load can last a family of eight about 4 days. This implies that 2 back loads are needed every week.

The members of the community have the right to harvest fallen logs, dry branches and twigs. They can only use a machet to harvest the firewood and not axes. The preferred tree species for firewood is Tobongmwo (*Vernonia auriculifera*) which is also still abundant in the forest. This species regenerates easily, dries fast and burns efficiently. The firewood collected is basically for subsistence use. Less than 5% of the user-group were reported to occasionally sell firewood at a cost of Ushs 500 per back load.

The second most important forest product for the firewood collectors are mushrooms which are gathered during the first rainy season (April, May and June). There are two species of mushroom collected: the white *Arok* and the grey *Kuguitene*. The mushrooms gathered are mostly for home consumption.

The third most important product harvested by this user group are bamboo shoots which are eaten as vegetables. The species harvested is teka (*Arundinaria alpina*). Bamboos are harvested 2-3 weeks after sprouting when they are about half metre high and still tender. The bamboos sprout at the beginning of the rainy season which occurs at the beginning of April. The bamboo vegetation zone occurs at the high altitudes of 2,500 to 3000 metres above sea-level. Bamboo shoots are smoked and consumed or stored for later use. A small proportion of the smoked bamboo shoots are sold to traders from Mbale town.

Bamboo stem harvesters

The second biggest user-group in Katekenge settlement is the bamboo stem harvesters. The group comprises 15 men regarded in the

community as the poorest. These men derive most of their livelihood from the forest. They have limited farmland of about 0.5 ha. or less and own no cows or donkeys. However, they own a few goats, sheep, and pigs. The members of this user group harvest mature and dry bamboo stems using machets. The bigger stems are split and used in the construction of granaries while the smaller ones are used as stakes for beans. Those that are used as bean stakes are harvested during the growing season which occurs between April and October. Bamboos for construction of granaries are harvested towards the maize harvesting season which occurs in August.

There are no restrictions on the quantities of bamboo stems to be harvested. One headload contains enough stems to construct one granary worth Ushs 6,000. Members of this user group occasionally harvest bamboo shoots for vegetables. They however work on other people's farms as casual labourers during the off-season.

Herbal medicine harvesters

This is a small user group composed of 4 women and 7 men who are elderly. These people are also regarded as poor by the community. Traditional healers were highly respected members of the community in the past. However, when modern medicine became widely available, the status of traditional healers was reduced and many of them became poor. The size of this user group has been declining over the years as those who die are not readily replaced. Nevertheless, this group is still the custodian of cultural sites used for cultural ceremonies such as circumcision. Members perceive it a taboo to reveal details of these cultural sites.

A few members of this group own cows and others goats, sheep, and pigs. The members harvest the products from the less disturbed parts of the forest. The clients often pay a small fee, only after they have been healed. The amount paid varies and in most cases payment is just in kind. Other products harvested by this user group are firewood and mushrooms. Since they go to the forest more regularly, they are the first to notice the beginning of the mushroom season. They collect firewood in smaller amounts since they are elderly and their families tend to be small.

The Condition of Kapkwai Forest

A portion of the forest studied was approximately 300 ha and located just above the park staff houses. Sampling covered the now regenerating but formally encroached part of the forest, the undisturbed forest area above Kamari water falls (all part of a mixed montane forest below 2500 metres), and the neighbouring bamboo zone (part of bamboo and low canopy montane *Hagenea-Rapanea* forest).

Thirty circular forest plots of $300m^2$ each were randomly selected from the three zones. In each plot, three concentric circles were demarcated. In a one-metre radius, ground cover vegetation of herbs, grasses and seedlings was identified and the percentage ground cover occupied by each species estimated. In a three-metre radius, shrubs and saplings were identified, and their DBH and height measured. In the ten-metre radius, trees above 10cm diameter at breast height were identified and measured. Ten plots were located in the formally encroached area. This area was dominated by grass and seedlings of indigenous trees planted by the

FACE project. Twenty plots were located in the undisturbed and the bamboo forests.

The total tree species density was estimated at 280 trees, 1323 shrubs, and 830 saplings per hactare (See Appendix 2). The species richness of trees, shrubs and saplings were 36, 13 and 23 respectively. The low species richness is typical of most montane type of forests. Fifty-five percent of all tree stems counted were represented by only three different species, confirming a very low diversity as indicated by the Simpson and Shannon index of 8.6 and 2.6 respectively. Tabaswo (*Croton macrostachys*) accounted for 23% of the tree biomass in the plots. Chebakwa (*Neoboutonia macrocalyx*) ranked second in importance value, representing 19.4% of the tree biomass while Tobogmwo (*Vernonia auriculifera*) ranked third in importance value, representing 12.3% of the tree biomass. These three species are important for the community for the provision of timber, firewood, medicine, rafters for house construction, and stakes for beans. According to the residents, the preferred trees for timber were Pekeryo (*Olea welwitschii*), Armoti (*Prunus africana*) and Stetet (*Podocarpus milanjianus*).

Stetet was identified in only one plot, while Armoti and Pekeryo were not observed in the 30 plots sampled. This suggests that these species have been over-exploited and may now be endangered. These tree species were also not observed at the sapling stage. It is likely that there are not enough mature seed trees. Consequently, seed production may have been reduced thereby slowing down the rate of regeneration of these valuable timber species. It is hoped that the enrichment planting being carried out by FACE project will address this problem.

The forest areas close to the communities were dominated by small trees with DBH ranging from 15 to 25cm. The size of the trees tended to increase as the distance from the communities increased (See Appendix 3). Lulyo (*Aningeria* sp.) and Lamanywa (*Syzygium guineense*) had the largest trees with an average DBH of 86cm. This may suggest that the communities were not able to harvest trees located 3 to 4km from the settlement because of the difficult terrain.

The shrubs and ground cover in Kapkwai forest were dominated by tekelye (*Acanthus eminens*), and Senjet (*Draceana fragrans*). Most of the shrubs and grasses are used as fodder for animals and thatch materials by the local communities. Formally encroached areas have been replanted with indigenous tree species and shrubs by the FACE project. The ages of the seedlings range from six months to two years. The survival percentage of the seedlings close to the communities was below 50%. Most of the seedlings were damaged by cows and goats. The indigenous trees that were planted include Stetet, Tabaswo, and Borowetapmoi (*Dambeya goetzenii*). The objective of the FACE project is to restore the original vegetation type on the mountain and to create carbon sinks in order to stop global warming.

Conclusions and Recommendations

The management of Mt. Elgon forest changed in 1995. The forest is now being developed into a National Park. Under the Forest Department, the areas of the forest with low tree cover were afforested with Pine (*Pinus patula* and *Pinus caribea*) and Cyprus (*Cuppressus lustanica*) species. These areas had been encroached for

settlement and cultivation. However, in order to enhance the tourism potential of the National Park, the Pine and Cyprus plantations are being clear-felled and indigenous tree species allowed to recolonise these areas. Similarly, formally encroached areas have been replanted with indigenous tree species.

Under the Forest Department, consumptive use of the forest by the local communities was allowed. When the status of the forest reserve changed to a national park, local communities lost access to the resources previously obtained from the forest. This brought about conflict of interest between the local communities and the Uganda Wildlife Authority (UWA)—the new managers of the forest.

Although there is low population pressure around the forest, there are no alternative sources of forest produce in the area. Most of the land is under agriculture and the crops grown include wheat, beans and maize. The residues of these crops are fed to the cows and donkeys. There are no woodlots and trees on the farms where alternative sources of forest products could be obtained. Due to the severe shortage of wood products, the park authorities changed the access rules and allowed local communities to harvest forest products (except timber) for subsistence use.

Evidence from the forest plots, however, indicates that there is heavy dependence of the communities on the forest resources for firewood, poles, and bamboo shoots. Over 80% of the sample plots close to the community showed evidence of consumptive use of the forest. The level of harvesting decreased as one moved farther up the mountain. If exploitation continues at the present rate, there is a danger that the tree species preferred for firewood and bamboo shoots will be over-harvested. In order to alleviate the acute shortage of forest produce and reduce dependance of the community on the national park, there is a need to increase tree cover in the nearby communities. On the Kenya side of the national park, forest reserves and forest plantations have been developed alongside the national park to act as a buffer to the park.

In order to reduce the tension between the communities and the park authorities, pilot community-based management committees have been established in some locations. Other communities are also requesting for the formation of their own committees. However, because of the low number of tourists visiting the park, there is not enough cash revenue to share with the communities.

The purpose of the committees is to increase the level of local participation in the management of the park, share the benefits with local communities, and consequently reduce the tension between the local people and the park authorities. Whether the condition of the forest patches under collaborative forest management is better than those without collaborative management committees cannot yet be determined.

Compared to other national parks in Uganda, there is extensive use of the forest resources from Mt Elgon National Park by local communities. However, the lack of alternative sources of biomass fuel makes the communities over exploit the trees in the national park for firewood.

The harvesting of bamboo shoots for food is a short-term activity. The shoots are available for only 2 months in a year. Few members of the community collect these products because of the long distance one must travel in order to collect them. Apparently, harvesting of bamboo shoots does not lead to the degradation of the resource and could therefore be encouraged and developed. The commercial potential of bamboo shoots should be explored.

Appendix 1

List of Forest products for Kapkwai Forest in Mt. Elgon National Park.

- Firewood
  - Tobongmwo (*Vernonia auriculifera*)
  - Tekelye (*Acanthus eminens*)
  - Uriyonet or muna (Unknown)
  - Sigiryo (*Bersama abyssinica*)
  - Bionwo (*Allophylus dummeri*)
  - Chunya (*Acacia sieberiana*)
  - Cheptuya (*Diospyros abyssinica*)
- Charcoal
  - Not used
- Poles
  - Teka - (*Arundinaria alpina*)
  - Chebakwa (*Neobontonia macrocalyx*)
  - Kuryo (*Teclea nobilus*)
  - swesu (*Albizia gummifera*)
  - Chemowonsoy (*Allangium chinense*)
  - Chorwa (*Nuxia congesta*)
  - Sogorwo (Hagenia abyssinica)
- Grazing grass
  - Nyariret (Unknown)
  - Nukut (Unknown climber)
  - Surumtit (*Achyranthes aspera*)
- Thatching grass
  - Nyariret (unknown)
  - Teka (*Arundinaria alpina*)
- Medicines
  - Tabaswo (*Croton macrostachys*)
  - Chesamis (*Clausena anisata*)
  - Sumotwo (*Ficus natalensis*)
  - Kuryo (*Teclea noblis*)
  - Tworoyo (*Marrattia fraxinea*)
  - Nangwayit (*Cyathula polycephala*)
  - Kwalet (*Schefflera volkensii*)
- Fibres
  - Ntilya (*Acacia hookii*)
  - Busumwa (*Clematis sinensis*)
- Vegetables
  - Teka (*Arundinaria alpina*)
  - Sojet (*Solanum nigrum*)

Appendix 2

Trees: Summary Statistics for All Plots Collected

Number of plots:	30	Mean DBH: 26.55cm
Total Stem Count	267	Mean Height: 13.04 m
Stems per Plot:	8.90	
Projected Stem Count/ha:	280	
Species Richness:	36	
Singletons:	10	(Number of single species occurrences)
Doubletons:	9	(Number of double species occurences)
Uniques:	13	(Number of species found in only 1 plot)
Duplicates:	13	(Number of species found in only 2 plots)
Simpson Index	8.61	
Pielou?s Simpson Index	2.153502	
Simpson Reciprocal:	0.116077	
Shannon Index:	2.6774	

Shrubs: Summary Statistics for All Plots Collected

Number of plots:	30	Mean DBH: 4.82 cm
Total Stem Count:	112	Mean Height: 4.57 m
Stems per plot:	3.73	
Projected Stem Count/ha.:	1323	
Species Richness:	13	
Singletons:	4	(Number of single species occurences)
Doubletons:	1	(Number of double species occurences)
Uniques:	5	(Number of species from in only 1 plot)
Duplicates:	3	(Number of species found in only 2 plots)
Simpson Index:	3.99	
Pielou?s Simpson Index:	1.385007	
Simpson Reciprocal:	0.250322	
Shannon Index:	1.8344	

Saplings: Summary Statistics for All Plots Collected

Number of plots:	30	Mean DBH: 5.79cm
Total Stem Count	70	Mean Height 4.73m
Stems per plot:	2.33	
Project Stem Count/ha.:	830	
Species Richness:	23	
Singletons:	14	(Number of single species occurences)
Doubletons:	5	(Number of double species occurences)

Uniques:	17	(Number of species found in only 1 plot)
Duplicates:	3	(Number of species found in only 2 plots)
Simpson Index:	4.55	
Pielou?s Simpson Index:	1.514692	
Simpson Reciprocal:	0.219876	
Shannon Index:	2.2442	

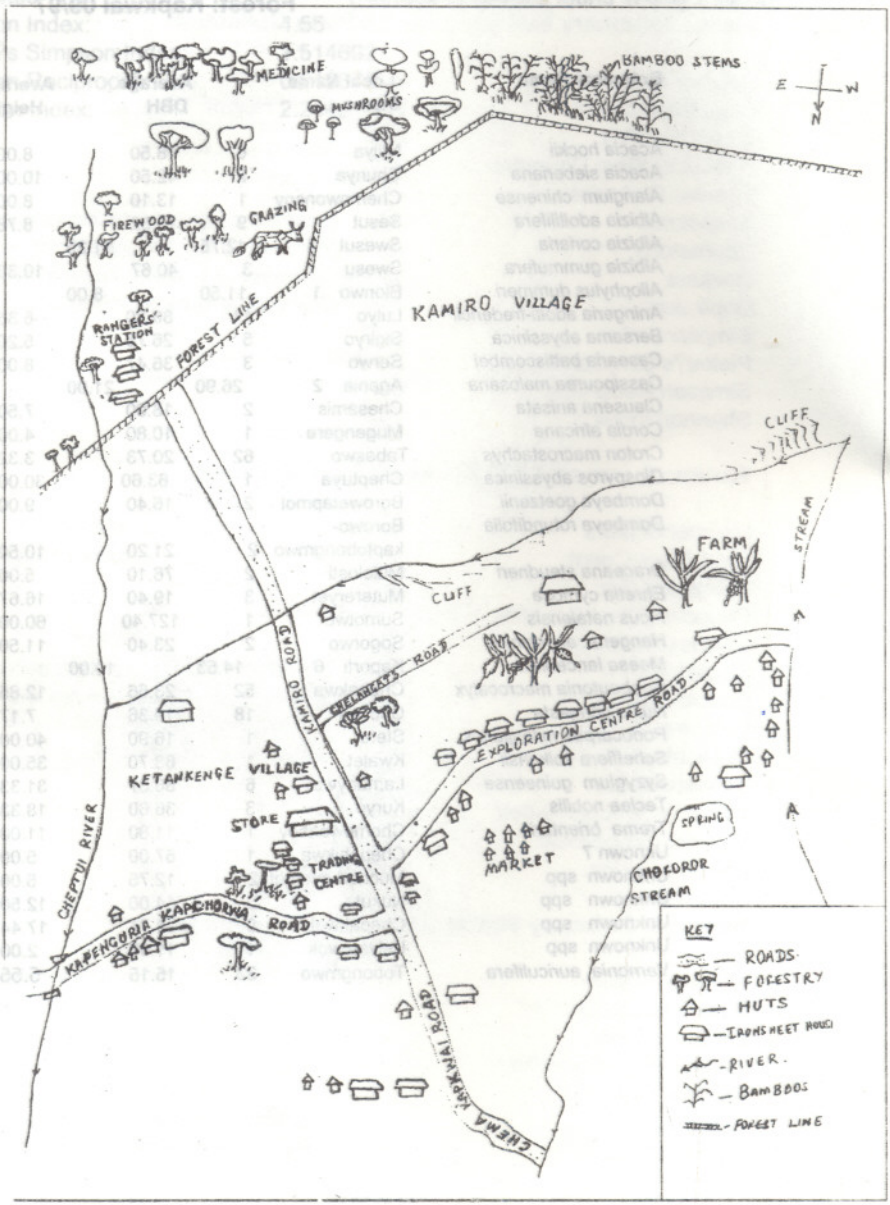
Appendix 3

Inventory List: By Botanical Name
Forest: Kapkwai 09/97

Botanical Name	Local Name	Stems	Average DBH	Average Height
Acacia hockii	Ntilya	6	18.50	8.00
Acacia sieberiana	Chunya	2	42.50	10.00
Alangium chinense	Chemowonsoy	1	13.10	8.00
Albizia adoltilifera	Sesut	9	16.52	8.78
Albizia coriaria	Swesut	4	42.75	11.25
Albizia gummufera	Swesu	3	40.67	10.33
Allophylus dummeri	Bionwo	1	11.50	8.00
Aningeria adolfi-fredericii	Lulyo	11	86.30	6.36
Bersama abyssinica	Sigiryo	5	26.76	5.20
Casearia battiscombei	Serwo	3	36.47	8.00
Cassipourea malosana	Agania	2	26.90	21.00
Clausena anisata	Chesamis	2	18.00	7.50
Cordia africana	Mugengere	1	10.80	4.00
Croton macrostachys	Tabaswo	62	20.73	3.32
Diospyros abyssinica	Cheptuya	1	63.60	30.00
Dombeya goetzenii	Borowetapmoi	2	16.40	9.00
Dombeya rotundifolia	Borowo-kaptobongmwo	2	21.20	10.50
Draceana steudneri	Mulolosti	2	76.10	5.00
Ehretia cymosa	Mutereryet	3	19.40	16.67
Ficus natalensis	Sumotwo	1	127.40	60.00
Hangeria abyssinica	Sogorwo	2	23.40	11.50
Maesa lanceolata	Kaporti	6	14.53	10.00
Neoboutonia macrocalyx	Chebakwa	52	23.66	12.85
Nuxia congesta	Chorwa	18	19.36	7.17
Podocarpus milanjianus	Stetet	1	16.90	40.00
Schefflera volkensii	Kwalet	1	63.70	35.00
Syzygium guineense	Lamanywa	6	86.37	31.33
Teclea nobilis	Kuryo	3	36.60	18.33
Trema orientaris	Chomowonsoy	1	11.80	11.00
Uknown 7	Chepchikwa	1	57.00	5.00
Unknown spp	Muchurkoyontet	2	12.75	5.00
Unknown spp	Nukut	2	14.00	12.50
Unknown spp	Chepakwet	9	24.77	17.44
Unknown spp	Kelyamwok	1	11.00	2.00
Vernonia auriculifera	Tobongmwo	33	15.15	5.55

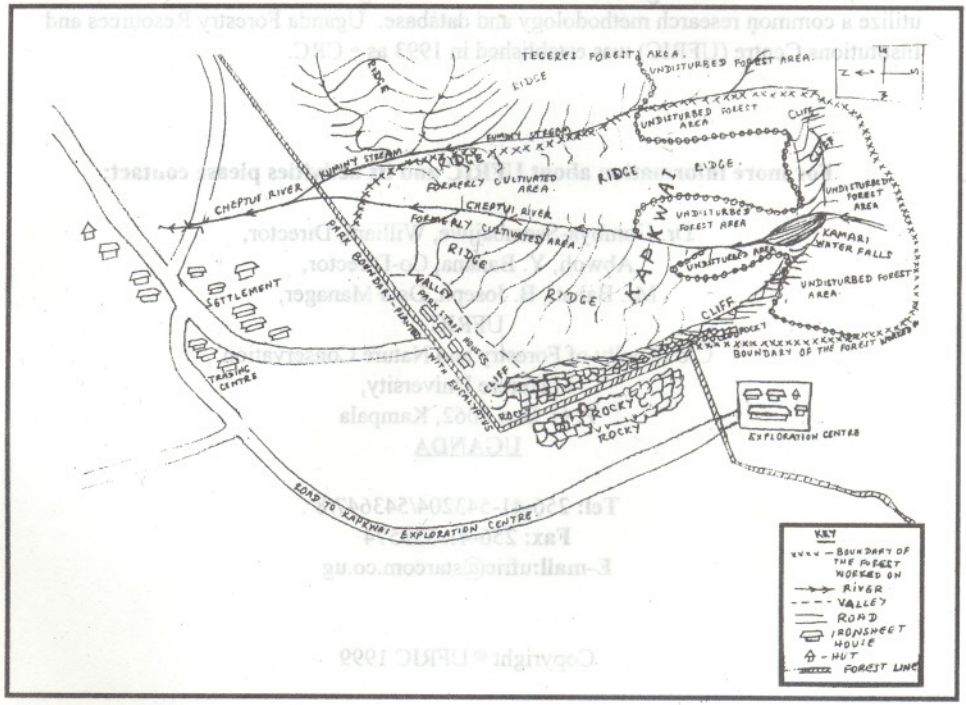
Appendix 4

Map showing the settlement of Katankenge



Appendix 5

Map showing the location of Kapkwai Forest



The International Forestry Resource and Institutions (IFRI) Research Programme was developed in 1992, at the Workshop in Political Theory and Policy Analysis, Indiana University, to investigate issue of governance of forests as common-pool resources (CPRs). IFRI works through a network of Collaborating Research Centres (CRCs) that utilize a common research methodology and database. Uganda Forestry Resources and Institutions Centre (UFRIC) was established in 1993 as a CRC.

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