

Notes and records

Utilization of forest plant resources by the local people around Kalinzu Forest Reserve, South-Western Uganda

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Introduction

Local communities depend on Kalinzu Forest Reserve (KFR) for plant resources (Appendix 2). This resource utilization affects the forest ecosystem. The frequency and methods of harvest were studied to assess the impact of plant resource utilization in Kalinzu. The forest supports twelve species endemic to it. These include nine butterfly species, one mammalian species and two tree species. This study documented the plant resources harvested, plus frequency, quantities and mode of harvest, to make recommendations that can encourage sustainable forest resource use.

Observation and interviews with resource harvesters were used to identify plant products harvested and the species from which they were harvested. Interviews were held with heads of randomly selected households to obtain more information about plant products harvested from the forest. The frequency of resource harvest was determined by noting the number of people that harvested a particular resource on each day of harvest.

Kalinzu Forest Reserve occupies parts of the counties of Bunyaruguru, Ruhinda and Igara in Bushenyi district south-western Uganda, with a population density of 328 persons km⁻². It was gazetted for a reserve in 1932 with an area of 461 km², but some of the land was given off for tea estates development in 1954. The reserve now covers an area of 137 km² (Howard, 1991). It lies on the eastern side of the Great Western Rift Valley at the edge of the escarpment overlooking Lake Edward. KFR is located between latitude 0°17' and 0°30'N and between 30°00'

and 30°07' E and at an altitude ranging from 1200 to 1500 m above sea level.

Results

Firewood was harvested for daily cooking of food. Different species exhibited varying frequencies of harvest in a period of 12 months. Throughout the study period, 2,619,042 tonnes of firewood were harvested. The frequency of firewood harvested from KFR and from household land was compared with test the hypothesis, which stated, 'Communities around Kalinzu forest are not dependent on the forest for firewood'. Throughout the study, the households harvested more firewood from the forest than they did from household land. Therefore, the local people are dependent on the forest for firewood ($P > 0.01$; $Z = 35.331$).

The quantity of firewood harvested varied between months and seasons (Appendix 1). More firewood was harvested during the dry season (151,828.75 tonnes) than during the wet season (11,075.45 tonnes). School-holiday months registered high quantities of firewood harvested. Females harvested more firewood than males. The females harvested 176,6307 tonnes while males harvested 85,2735 tonnes during the study period. While females mainly harvested the firewood for household use, males mainly harvested it for sale.

Communities neighbouring KFR harvested building materials during the study period. A total of sixteen tree species that belong to thirteen families were harvested for poles. Two grass species, *Imperata cylindrica* and *Pennisetum purpureum* were harvested from the buffer zone of the forest. Each of the 203 households in the study area reported harvesting medicinal plants from the forest at least once every week. During this study, 34 plant species belonging to 21 families were harvested to treat human illnesses. Different species used to treat different diseases were harvested from different parts of the forest. Most of these species were harvested to treat internal parasites. They were harvested mainly from the nature reserve, the buffer zone and the forest edge. Of the 34 species harvested, leaves were harvested from 20, bark from 16, roots from 09 and fruits from 02 species. Five plant species that belong to five families were harvested to treat livestock diseases.

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Local people harvested edible plant resources from KFR. Twelve species that belong to ten families were harvested for food. Six plant species belonging to six families were harvested for making handicraft products such as baskets, granaries and mats.

Cutting, debarking, uprooting and leave plucking were the methods employed to harvest different plant resources. Most of these methods were destructive and resulted into plant death.

Discussion

Firewood is mainly harvested from the forest because the adjacent communities lack alternative sources of firewood. More fire wood was harvested during the dry season because women are less engaged in agriculture compared with rainy seasons. The high quantity of firewood harvested during nonschool days indicates that when children are not at school they participate in firewood harvest.

Communities adjacent to KFR are characterized by illiteracy, poor sanitation and low-living standards, which permit room for diseases. Therefore, the local people harvest medicinal plants to treat both human and animal diseases because conventional medicines are expensive and the people live far from health facilities. This is in agreement with the findings by Kamugisha (1993) and Bhattacharya (2004). The forest is viewed as their pharmacy. Furthermore, those involved in commercial medicinal plant harvesting earn a living from it and thus view the forest as a significant source of income.

Although the local people are essentially cultivators, they frequently access the forest to harvest plant resources to supplement their diets. Harvest of food from the forest is mainly carried out during dry seasons when drought reduces the growth of garden food crops. Wild food harvest is common for species that are of nutritional value, but are not domesticated. This is in agreement with the findings of Byarugaba, Ndemere & Midgley (2007) in Bwindi Impenetrable national park. The harvesting of plant resources has opened up the forest canopy, a scenario that has led to easy access of the forest floor by agents of dispersal and changed the local conditions in the forest. This change has affected the distribution of plant and animal species.

Conclusion

Communities adjacent to KFR are dependent on it for plant products. These products are important substitutes for the

rather expensive market products. However, the methods used to harvest these resources are unsustainable. Management interventions that promote sustainable utilization should be introduced if the forest's biodiversity is to be conserved.

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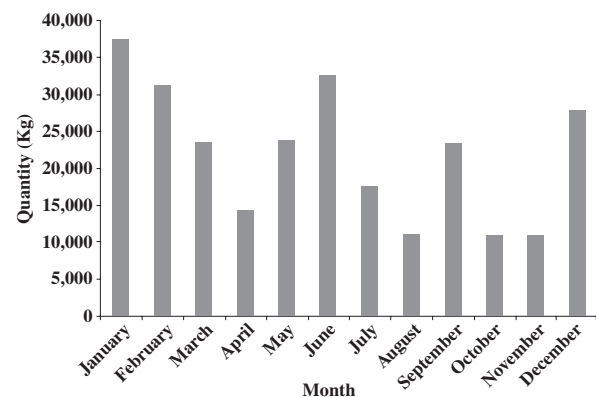
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Appendix 1 Quantity of firewood harvested monthly from Kalinzu Forest Reserve from January to December 2005.



Appendix 2 Multiple uses of some plant species harvested from Kalinzu Forest Reserve.

Scientific name	Fuel wood	Medicinal	Poles	Basketry	Beer vats	Mortars	Thatching	Fruits	Walking sticks	Tool handles	Granary	Stools
<i>Acanthus pubescens</i>	X	X										
<i>Albizia gummifera</i>	X								X	X		
<i>Alstonia boonei</i>	X											
<i>Bridelia scleroneura</i>	X	X						X				
<i>Carapa grandiflora</i>	X		X									X
<i>Celtis mildbreadii</i>	X											
<i>Combretum collinum</i>	X		X						X	X		
<i>Cordia abyssinica</i>	X				X	X			X	X		X
<i>Croton macrostachyus</i>	X											
<i>Cynometra alexandrei</i>	X		X			X			X	X	X	X
<i>Diospyros abyssinica</i>	X		X						X	X		X
<i>Drypetes bipindensis</i>	X								X	X		
<i>Ehretia cymosa</i>	X											
<i>Entandrophragma excelsum</i>	X		X						X	X		
<i>Entandrophragma utile</i>	X		X						X	X		
<i>Ficus natalensis</i>	X			X	X	X					X	
<i>Ficus sur</i>	X				X							
<i>Ficus sycomorus</i>	X											
<i>Flacourtia indica</i>	X											
<i>Funtumia africana</i>	X		X									
<i>Hurungana madagascariensis</i>	X		X						X			
<i>Imperata cylindrica</i>							X					
<i>Lovoa swynnertonii</i>	X		X						X	X		
<i>Lovoa trichilioides</i>	X		X									
<i>Maesa lanceolata</i>	X											
<i>Markhamia lutea</i>	X		X						X	X		X
<i>Maytenus acuminata</i>	X											
<i>Mitragyna rubrostipulata</i>	X											
<i>Morus mesozygia</i>	X											
<i>Newtonia buchananii</i>	X		X		X	X			X	X	X	X
<i>Olea chrysophylla</i>	X		X							X		
<i>Parinari excelsa</i>	X	X	X						X			
<i>Pennisetum purpureum</i>							X					
<i>Polyscias fulva</i>	X					X						X
<i>Prunus africana</i>	X	X	X		X						X	
<i>Rothmannia urcelliformis</i>	X		X							X		
<i>Sapium ellipticum</i>	X		X						X	X		
<i>Solanecio mannii</i>	X											
<i>Strombosia scheffleri</i>	X											
<i>Teclea nobilis</i>	X		X							X		X
<i>Trema orientalis</i>	X		X									
<i>Vitex doniana</i>	X											
<i>Zanthoxylum gillettii</i>	X	X	X									