

Preliminary ethnobotanical studies of the Rwenzori Mountain forest area in Bundibugyo District, Uganda

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ABSTRACT

Ethnobotanical studies of the Rwenzori Mountain forest area in Bundibugyo District in Uganda were carried out between May and December 1991, and covered the northern part of the Rwenzori Mountain slopes occupied by the Bakonjo people.

The presence of a major footpath through the forest with numerous utility trails radiating from it showed that some forest resources are being sought by the local population. Plant biodiversity is high, as is indicated by the fact that in a study plot of only 4 250 m², a total of 115 plant species, 101 genera and 57 families were identified from a collection of 300 plant specimens.

Seventy-seven plant species were found to be of some importance to the local communities. Out of the 77 useful plant species recorded: 22 species were used for medicinal purposes; 16 for firewood; 13 for construction, joinery and furniture; 12 for craftwork; 10 provided edible fruits and vegetables; and 27 were used for a variety of other purposes. These other purposes include construction of shrines, covering of granary floors, use as toilet paper, carrying luggage, and fodder for goats, sheep and cattle. *Arundinaria alpina* K. Schum. (bamboo) is the species that is most extensively harvested from the forest.

UITTREKSEL

Etnobotaniese studies van die woudegebied van die Rwenzori-berg in die Bundibugyo-distrik in Uganda is tussen Mei en Desember 1991 onderneem. Die noordelike deel van die hange van die Rwenzori-berg waar die Bakonjo-volk woon, is gedek.

'n Breë voetpad deur die woud met talle dienspaadjies wat daaruit lei, was 'n aanduiding dat bronne in die woud deur die plaaslike bevolking benut word. Plantbiodiversiteit is hoog, soos blyk daaruit dat in 'n studieperseel van slegs 4 250 m², 'n totaal van 115 plantspesies, 101 genusse en 57 families in 'n versameling van 300 planteksemplare geïdentifiseer is.

Sewe-en-sewentig spesies is deur die plaaslike gemeenskappe benut. Van die 77 nuttige plantspesies aangeteken, is 22 vir geneeskundige doeleindes gebruik, 16 vir vuurmaakhout, 13 vir konstruksie, skrynwerk en meubels, 12 vir handwerk; 10 het eetbare vrugte en groente opgelewer, en 27 is vir 'n verskeidenheid ander doeleindes gebruik. Voorbeelde hiervan is die konstruksie van altare, bedekking van graanskuurvloere, benutting as toiletpapier, die dra van bagasie, en voer vir bokke, skape en beeste. *Arundinaria alpina* K. Schum. (bamboes) is die spesie wat die meeste uit die woud verwyder word.

INTRODUCTION

In the conservation of forests our governments quite often have taken no account of the non-timber products important in national economies. This attitude has also been observed in Latin America's humid tropical forests (Pinedo-Vasquez *et al.* 1990). Prance *et al.* (1987) classified these non-timber products into craft materials, medicinals, seeds and fruits and other edibles, as well as sources of latex, construction fibres and poles and many other goods that cannot easily be categorized.

Studies of the vegetation of Uganda are available (Snowden 1953; Langdale-Brown 1960; Lind & Tallantire 1975; Hamilton 1984; Howard 1991), but few ethnobotanical studies have been carried out. There is also a general lack of public awareness in Uganda of the values of wild plants and the need to use them sustainably. This has led to careless and wanton destruction of many valuable plant species with unacceptable consequences (Karani 1982; Hamilton 1984).

Sociobotanical studies in Uganda have mainly addressed the relationship between humans and plants as defined in terms of cultural use. The main aim has been to explore human use of certain plants and how such plants are identified with particular social situations. It is in this identification that the social or cultural value of a plant is seen to be institutionalized in people's culture. For instance, some scholars have focused on the importance of the banana plant to the Baganda culture, millet to some aspects of culture of the Iteso and the story of the barkcloth in Buganda (Musoke 1975; Nyanzi-Makumbi 1976; L'Obwolo 1980).

With regard to traditional medicines, there are two distinct groups of people who deal with illnesses. These are the 'medicine man' or the 'diviner' who not only issues medicines but is also socially sanctioned to explain the cause(s) of illnesses. The other group is made up of herbalists who literally deal exclusively with herbs and herbal medicines for specific illnesses but not with their supposed underlying supernatural causes. Ogwal & Kakudidi (1989 unpublished) have made some preliminary collections of medicinal plants which have been deposited in the Herbarium of the Department of Botany, Makerere University.

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FIGURE 1.—Map of Uganda with study site of the Rwenzori Mountain forest area in Bundibugyo District, ---, forest reserve boundary; xxx, Bupompoli Ridge (25-9-91).

In Uganda, Anokbongo (1972) undertook a general pharmacological experimental study of nine local medicinal plants with a view to confirming or disproving their pharmacological and medicinal potency. Kokwaro (1976) in his book entitled *Medicinal plants of East Africa* briefly discussed a number of medicinal plants used in Kenya and Tanzania. Cunningham (1990) reported a massive trade in herbal medicines among the Zulu people of South Africa. Other publications on medicinal plants of Africa include those of Watt & Breyer-Brandwijk (1962) on *Medicinal and poisonous plants of southern and eastern Africa* and Verdcourt & Trump (1969) on *Common poisonous plants of East Africa*.

Our project was intended to cover some ethnobotanical aspects of the Bakonjo and Baamba who live in Bundibugyo District on the northern slopes of the Rwenzori Mountains. The Rwenzori Forest Reserve Area was gazetted as a National Park in 1991 by the Uganda Government.

Objectives of the project included making an inventory of the plants in the Rwenzori Forest Reserve Area, undertaking ethnobotanical studies of the forested area and its environs, stimulating public awareness of the importance of sustainable utilization of wild plants, identification of conservation problems and enhancing local participation in finding solutions for such problems.

Apart from timber-producing trees, scientific information on other plants in the mountain region has not been documented. It is speculated that nine species of higher plants are endemic to the Rwenzori Mountain region

(Howard 1988). Such rare plant species need to be properly documented and conservation measures adopted to protect them from becoming extinct.

STUDY SITES AND METHODS

The study locale is on Bupompoli Ridge, on the northern part of the Rwenzori Mountain in Bundibugyo District, Uganda: lat. $0^{\circ}43'N$ to $0^{\circ}45'N$; long. $30^{\circ}03'E$ to $30^{\circ}07'E$ (Ref.: Fort Portal Map 1: 250,000). Figure 1.

The flats on the northern foot of the mountains lie within the East African Rift Valley System and are at an altitude of about 600 m. The land rises to about 3 650 m at Karangora, the highest point in Bundibugyo.

Field work was carried out between May and December 1991. This involved camping at two sites. The first camping site was at Bupompoli Primary School, two and a half hours walk up to the forest edge of the Bupompoli Ridge. The second camping site was located in Kizimba Village close to the forest. The study utilized a major human footpath passing over Bupompoli Ridge (Figure 1). Secondary trails radiating from the main footpath were treated as transects. In all, six transects of different lengths were used.

A number of sample plots were studied in each transect, depending on the length of each trail. Transect I consisted of four sample plots, transect II of three, transect III of two, transect IV of three, transect V of four sample plots and transect VI of one sample plot. Each sample



FIGURE 2.—A group of Bakonjo transporting bamboo, *Arundinaria alpina*, from the forest (25-9-91).

plot had the dimensions of 50×5 m, making a total sample area of $4\,250\text{ m}^2$.

Specimens of every plant species found in each of the sample plots were collected, whereas only the presence was recorded if already collected. Specimens of very tall trees were not in many cases collected because of inaccessibility of the branches. The names of such tall trees, where known, were written down. As the plants were being collected, the Field Assistants (local to the area) were asked to give vernacular names whenever possible.

The local use(s) of the plants collected were recorded. Plant specimens collected were brought to the camping sites where people were asked to give vernacular names and uses. The specimens were then prepared for pressing and later identified by reference to material in the herbarium of the Department of Botany, Makerere University. Our vouchers were deposited in the same herbarium.

Interviews were also conducted among the people in Kizimba Village about their attitudes towards the forest reserve bordering their village. They were asked about the values of the land use practices and associated problems. Finally, the villagers were also asked about their history of settlement in this area close to the forest reserve.

RESULTS

Local communities

There are two major indigenous ethnic groups inhabiting Bundibugyo District. These are the Baamba and the Bakonjo. The Baamba inhabit the flat areas between the mountains while the Bakonjo occupy the higher slopes. The Baamba have a medium population density of about $50/\text{km}^2$ except in areas of forest reserves where they are

not allowed to settle, while the Bakonjo have a higher population density except in the gullies which are uninhabited. The Baamba extensively grow wheat, potatoes, cabbages and coffee whereas the Bakonjo grow coffee and cocoa.

Harvesting of forest plants

The existence of a major footpath passing through the forest reserve (now a National Park) from Bundibugyo District to Kabarole District shows that some business is being conducted between the two districts. Secondly, the presence of numerous secondary trails radiating from the major footpath into the forest shows that there are certain things the people are collecting in the forest. This study revealed that 77 plant species collected from the forest had some use locally. The most notable forest plant harvested by the Bakonjo was *Arundinaria alpina* (Figure 2). Tables 1–6 & 8 show different ways in which the Bakonjo and Baamba use wild plants from the forest or their surroundings.

Medicinal plants

From our interviews in the local communities we found that 22 plant species were used for treating a variety of diseases or medical conditions (Table 1). These include grey speck in the eye, diarrhoea, boils, skin rashes, hypertension, stomach ache, tapeworm, fever and other bodily pains. Some species were also reportedly used for increasing sexual potency in men and others were used for driving out evil spirits from people. Herbs constituted 59.1% (13/22) of the medicinal plants, 13.6% (3/22) were shrubs, 18.2% (4/22) were climbers and 9.1% (2/22) were trees. Most of the medicinal plants were prepared by crushing the plant materials and using water to extract the active ingredients. The water extracts were mainly administered orally or applied directly to the affected part of the body. The medicinal plants made up 28.6% (22/77)

TABLE 1.—Species used by the Bakonjo and Baamba as medicinals

Family	Taxon	Voucher no.	Habit	Part used	Preparation	Medical treatment
Asclepiadaceae	<i>Mondia whitei</i> (Hook. f.) Skeels	87	climber	stems and roots	Chewed	Stimulating sexual potency in man
Asteraceae	<i>Crassocephalum</i> sp. 1	8	herb	leaves	Pounded and extracted with water	Diarrhoea
	<i>Crassocephalum</i> sp. 2	34	herb	leaves	Pounded and extracted with water	Diarrhoea
	<i>Dichrocephala integrifolia</i> Katz.	54	herb	stems	Cut and tied round head	Driving out evil spirits from patients
Chenopodiaceae	<i>Chenopodium ambrosioides</i> L.	129	herb	roots	Pounded and extracted with water	Stomachache and worms
	<i>C. procerum</i> (Hochst.) Mez	130	herb	roots	Pounded and extracted with water	Stomachache
Cucurbitaceae	<i>Coccinia mildbraedii</i> Harms	114	herb	stems and roots	Pounded and rubbed on body	Easing muscular pain
	<i>Lagenaria sphaerica</i> (Sond.) Naudin	108	climber	roots	Chewed	Stomachache
	<i>Momordica foetida</i> Schumach.	61	climber	stems	Pounded and extracted with water	Fever and stomachache
	<i>M. pterocarpa</i> A. Rich.	104	climber	stems	Pounded and extracted with water	Stomachache
	<i>Peponium vogelii</i> (Hook. f.) Engl.	98	herb	roots	Pounded and extracted with water	Stomachache
Euphorbiaceae	<i>Acalypha psilostachya</i> Hochst.	59	shrub	leaves	Pounded and extracted with water	Stomachache and broken bones
Fabaceae	<i>Desmodium repandum</i> Vahl	7	herb	leaves	Pounded and extracted with water	Diarrhoea
Lamiaceae (= Labiatae)	<i>Plectranthus laxiflorus</i> Benth.	10	herb	roots	Pounded and juice squeezed out	Boils
Liliaceae s.l.	<i>Dracaena afromontana</i> Mildbr.	11	tree	leaves	Pounded and extracted with water	Hypertension
Musaceae	<i>Ensete edule</i> J.F. Gmel.	113	herb	leaf bases	Cut fleshy leaf bases	Lameness in children
Myrtaceae	<i>Embelia schimperi</i> Vatke	46	shrub	fruits and leaves	Eaten and chewed respectively	Tapeworm and stomach-ache
	<i>Maesa lanceolata</i> Forssk.	44	tree	bark	Pounded and extracted with water	Stomachache and bodily pains
Piperaceae	<i>Piper capense</i> L. f.	30	shrub	leaves	Pounded and extracted with water	Boils
Plantaginaceae	<i>Plantago palmata</i> Hook. f.	103	herb	leaves	Tied round wrists	Protection against dangers
Polygonaceae	<i>Polygonum setosulum</i> A. Rich.	57	herb	leaves	Boiled in water	Whooping cough
Rosaceae	<i>Alchemilla kiwuensis</i> Engl.	2	herb	leaves	Pounded and juice squeezed out	Grey speck in eye

of the useful plant species and 19.1% (22/115) of all plant species documented.

Among the plant species identified as medicinals, species of the family Cucurbitaceae made up 22.7% (5/22) of the 14 families. Members of the family Asteraceae accounted for 13.6% (3/22), species of Chenopodiaceae and Myrtaceae each 9.1% (2/22). The remaining families had only one species each of medicinal value.

Firewood

Sixteen plant species were identified as being used as firewood (Table 2). This is quite a large number of plant species sought for by villagers close to the forest. Trees constituted 62.5% (10/16) of the plant species used as firewood, 25% (4/16) were shrubs and 12.5% (2/16) were herbs. The herbs and shrubs were mainly fetched from the vicinity of homes where most trees had been cut down

to make room for agriculture. The herbs and shrubs were gathered for fast cooking or when it was too late for travelling long distances for more substantial fuel. Twenty five per cent (4/16) of the plant species used as firewood by the Bakonjo and Baamba belonged to the genus *Vernonia* of the family Asteraceae. Families Acanthaceae and Myrsinaceae had two species each, and Rubiaceae had three species used as firewood.

Construction

A fairly large number of plant species from the forest were also used for construction, mainly as poles, rafters or fibres (Table 3). Timber production was not carried out to any significant degree because the terrain made motorized transportation very difficult. Trees made up 76.9% (10/13) of the plant species used for construction joinery and furniture. One (1/13) was a climber and one

TABLE 2.—Forest species used by the Bakonjo and Baamba as firewood

Family	Taxon	Voucher no.	Habit
Acanthaceae	<i>Brachystephanus coeruleus</i> S. Moore	4	herb
	<i>Mimulopsis runssorica</i> Lindau	15	shrub
Aquifoliaceae	<i>Ilex mitis</i> Radlk.	49	tree
Asteraceae	<i>Vernonia adolfi-fridericii</i> Muschl.	12	shrub
	<i>V. auriculifera</i> Hiern	64	tree
	<i>V. cinerea</i> (L.) Less.	75	herb
	<i>V. syringifolia</i> O. Hoffm.	76	shrub
Euphorbiaceae	<i>Macaranga kilimandscharica</i> Pax	41	tree
Monimiaceae	<i>Xymalos monospora</i> (Harv.) Warb.	38	tree
	<i>Maesa lanceolata</i> Forssk.	44	tree
Myrsinaceae	<i>Rapanea melanophloeos</i> (L.) Mez	42	tree
Poaceae	<i>Arundinaria alpina</i> K. Schum.	80	tree
Rubiaceae	<i>Galiniera saxifraga</i> (Hochst.) Bridson	29	shrub
	<i>Psychotria mahonii</i> C.H. Wright var. <i>puberula</i> (Petit) Verdc.	23	tree
	<i>Rytigynia rwenzoriensis</i> (De Wild.) Robyns	47	tree
	<i>Dombeya elliotii</i> K. Schum.	58	tree

a tree fern. *Arundinaria alpina* was the most extensively used material.

Plant species used for construction, joinery and furniture made up 16.9% (13/77) of useful plant species and 11.3% (13/115) of all plant species recorded. Angiosperms constituted 93% (107/115) of the plant species documented and only 7.8% (9/115) were ferns. Some other trees such as *Macaranga kilimandscharica*, *Canthium oligocarpum*, *Dombeya elliotii* and *Xymalos monospora* were used as central and wall-supporting poles in buildings.

Craftwork

In the making of craftwork, a total of 12 plant species were documented as being valuable to the Bakonjo and Baamba (Table 4). Trees made up 58.3% (7/12) of the plant species used for craftwork, 16.7% (2/12) were

TABLE 4.—Species used for craftwork by the Bakonjo and Baamba

Family	Taxon	Voucher no.	Habit
Boraginaceae	<i>Cordia mellenii</i> Baker	118	tree
Connaraceae	<i>Connarus longistipitatus</i> Gilg	17	shrub
Cyperaceae	<i>Cyperus dereilema</i> Steud.	67	grass
Malvaceae	<i>Sida veronicifolia</i> Lam.	119	shrub
Monimiaceae	<i>Xymalos monospora</i> (Harv.) Warb.	38	tree
Moraceae	<i>Ficus natalensis</i> Hochst.	93	tree
Musaceae	<i>Ensete edule</i> J.F. Gmel.	113	tree
Myrsinaceae	<i>Rapanea melanophloeos</i> (L.) Mez	42	tree
Rubiaceae	<i>Canthium oligocarpum</i> Hiern	22	tree
Smilacaceae	<i>Smilax anceps</i> Willd.	90	climber
Theaceae	<i>Melchiora schliebenii</i> (Melch.) Kobuski	35	tree
Urticaceae	<i>Urera hypselodendron</i> Hochst.	106	climber

shrubs, and 16.7% (2/12) were climbers. One species was a grass.

Other craftwork include baskets made from *Sida* cf. *humilis* and *Smilax anceps*, as well as combs, axe handles, mortars and pestles made from *Connarus longistipitatus*, *Canthium rwenzoriense*, *Melchiora schliebenii* and *Rapanea rhododendroides*. Plant species used for craftwork made up 15.6% (12/77) of useful plants and 10.4% (12/115) of all plants recorded.

Food

Ten plant species were said to be used as food (Table 5). These consisted mainly of edible fruits and vegetables. They were not harvested in large quantities according to information obtained from the Field Assistants. The number of plant species used by the Bakonjo and Baamba as food was rather small. They made up only 13% (10/77) of useful plant species and 8.7% (10/115) of all plant species recorded. The number of wild species collected for food was small, probably because both the Bakonjo and Baamba are able to grow most of the food crops they need.

TABLE 3.—Species used by the Bakonjo and Baamba for construction and timber sales

Family	Taxon	Voucher no.	Habit	Specific use(s)
Boraginaceae	<i>Cordia mellenii</i> Baker	118	tree	Timber production
Convolvulaceae	<i>Ipomoea</i> sp.	123	climber	Rope for tying bamboos
Cyatheaceae	<i>Cyathea manniana</i> Hook.	97	tree fern	Construction poles
Euphorbiaceae	<i>Macaranga kilimandscharica</i> Pax	41	tree	Construction poles
Monimiaceae	<i>Xymalos monospora</i> (Harv.) Warb.	38	tree	Construction poles
Oleaceae	<i>Strombosia scheffleri</i> Engl.	50	tree	Timber production and construction poles
Passifloraceae	<i>Adenia</i> sp.	94	climber	Construction fibres
Poaceae	<i>Arundinaria alpina</i> K. Schum.	80	tree	Construction poles and thatching
Rosaceae	<i>Prunus africana</i> (Hook. f.) Kalkm.	20	tree	Construction poles
Rubiaceae	<i>Canthium oligocarpum</i> Hiern	22	tree	Construction poles
Sapotaceae	<i>Aningeria adolfi-fridericii</i> (Engl.) Robyns & Gilbert	19	tree	Timber production and construction poles
Sterculiaceae	<i>Dombeya elliotii</i> K. Schum. & Engl.	58	tree	Construction poles
Theaceae	<i>Melchiora schliebenii</i> (Melch.) Kobuski	35	tree	Construction poles

TABLE 5.—Species used for food by the Bakonjo and Baamba communities

Family	Taxon	Voucher no.	Habit	Part eaten
Balsaminaceae	<i>Impatiens congolana</i> Schtschenk.	72	herb	fruits
	<i>I. runssorensis</i> Warb.	100	herb	fruits
Myrtaceae	<i>Embelia schimperi</i> Vatke	46	herb	leaves
	<i>Maesa lanceolata</i> Forssk.	44	tree	leaves
Passifloraceae	<i>Passiflora edulis</i> Sims	31	herb	fruits
Polygonaceae	<i>Polygonum setosulum</i> A. Rich.	57	herb	stems
Solanaceae	<i>Capsicum annuum</i> L.	81	shrub	fruits
	<i>Solanum nigrum</i> L.	105	herb	leaves
Urticaceae	<i>Droguetia iners</i> (Forssk.) Schweinf.	117	shrub	leaves
	<i>Urera hypselodendron</i> Hochst.	106	climber	leaves

Minor uses

Another group of plant species was said to be used for miscellaneous purposes (Table 6). This category of plants made up 35.1% (27/77) of useful plant species and 23.5% (27/115) of all plants listed. Such purposes included construction of shrines, protection of crop fields against other people's evil motives, making of flutes and charms, covering granary floors, use as toilet paper, trapping birds, car-

rying luggage and fodder for livestock. Herbs constituted 59.3% (16/27) of this miscellaneous group of species, 25.9% (7/27) were shrubs, 11.1% (3/27) were trees and only one species was a grass. The families Aspleniaceae and Asteraceae were the most important in this category of uses, collectively making up 40.7% (11/27) of the species. Twelve other families constituted 44.4% of the species listed.

No special value

A relatively large number of plant species identified, 33% (38/115), had no economic value to the Bakonjo and Baamba communities. These fell into 26 families, 37 genera and 38 species (Table 7).

The floristic composition of this category of plants was 10.8% (4/37) grasses, 54.1% (20/37) herbs, 13.5% (5/37) shrubs, 5.4% (2/37) climbers and 18.9% (7/37) trees.

DISCUSSION

Of the plant species documented, 67% (77/115), were found to be useful in one way or the other by the Bakonjo and Baamba communities interviewed. This level of utilization falls within the range of 48.6% to 78.7% recorded for the Amazonian Parc, Tembe, Kaapo and Chacobo communities by Prance *et al.* (1987). Pinedo-

TABLE 6.—Miscellaneous uses of plant species by the Bakonjo and Baamba

Family	Taxon	Voucher no.	Habit	Uses of plants
Acanthaceae	<i>Mimulopsis runssorica</i> Lindau	15	shrub	fodder
	<i>Thunbergia mildbraediana</i> Lebrun & Touss.	27	herb	fodder
Amaranthaceae	<i>Cyathula cylindrica</i> Mez	25	herb	fodder
Aspleniaceae	<i>Asplenium abyssinicum</i> Fée	16	herb	making shrines
	<i>A. aethiopicum</i> (Burm. f.) Bech.	37	herb	making shrines
	<i>A. elliotii</i> C.H. Wright	52	herb	making shrines
	<i>A. erectum</i> var. <i>usambarense</i> Willd.	68	herb	making shrines
	<i>A. inaequilaterale</i> Willd.	69	herb	making shrines
	<i>A. linckii</i> Kuhn	70	herb	making shrines
Asteraceae	<i>Helichrysum</i> sp.	78	herb	carrying luggage
	<i>Vernonia adolfi-fridericii</i> Muschl.	12	shrub	toilet paper
	<i>V. auriculifera</i> Hiern	64	tree	toilet paper
	<i>V. cinerea</i> (L.) Less.	75	herb	toilet paper
	<i>V. syringifolia</i> O. Hoffm.	76	shrub	toilet paper
Basellaceae	<i>Basella alba</i> L.	82	herb	fodder
Dennstaedtiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn	84	herb	granary cover and covering food while cooking
Euphorbiaceae	<i>Acalypha psilostachya</i> Hochst.	59	shrub	fodder
	<i>Phyllanthus amarus</i> Schumach. & Thonn.	43	herb	fodder
Fabaceae	<i>Eriosema</i> sp.	21	shrub	trapping birds
Liliaceae s.l.	<i>Anthericum</i> sp.	33	herb	making charms
	<i>Dracaena afromontana</i> Mildbr.	11	tree	making shrines
Poaceae	<i>Panicum trichocladum</i> K. Schum.	62	grass	fodder
Polypodiaceae	<i>Athyrium scandicinum</i> (Willd.) C. Presl	26	herb	granary cover
Solanaceae	<i>Discopodium penninervum</i> Hochst.	48	tree	trapping birds
	<i>Solanum aculeatissimum</i> Jacq.	81	shrub	making charms
Thelypteridaceae	<i>Thelypteris dentatus</i> Forssk.	63	herb	making shrines
Verbenaceae	<i>Clerodendrum</i> cf. <i>johnstonii</i> Oliv.	109	shrub	drinking straws/smoking pipes

TABLE 7.—Species with no reported economic value to the Bakonjo and Baamba

Family	Taxon	Voucher no.	Habit
Acanthaceae	<i>Acanthus eminens</i> C.B. Cl.	5	shrub
	<i>Asystasia gangetica</i> (L.) T. Anderson	91	herb
Amaranthaceae	<i>Achyranthes aspera</i> L.	14	herb
	<i>Amaranthus lividus</i> L.	115	herb
Amaryllidaceae	<i>Scadoxus cyrtanthiflorus</i> (C.H. Wright) Friis & Nordal	92	herb
Apiaceae (=Umbelliferae)	<i>Caucalis</i> sp.	6	herb
	<i>Peucedanum aculeolatum</i> Oliv.	74	shrub
	<i>Sanicula elata</i> D. Don	127	herb
Brassicaceae (=Cruciferae)	<i>Cardamine africana</i> L.	88	herb
Celastraceae	<i>Maytenus acuminata</i> (L. f.) Loes.	120	tree
	<i>M. cf. undatus</i> (Thunb.) Blakelock	131	tree
Combretaceae	<i>Combretum</i> sp.	102	tree
Commelinaceae	<i>Aneilema beniniense</i> (P. Beauv.) Kunth	3	herb
	<i>Commelina africana</i> L.	39	herb
Cucurbitaceae	<i>Mukia maderaspatana</i> (L.) M. Roem.	133	herb
	<i>Zehneria scabra</i> (L. f.) Sond.	132	herb
Cyperaceae	<i>Carpha eminii</i> (K. Schum.) C.B. Clarke	89	grass
Dennstaedtiaceae	<i>Hypolepis sparsisora</i> (Schrad.) Kuhn	135	herb
Euphorbiaceae	<i>Erythrococca</i> sp.	13	herb
Flacourtiaceae	<i>Casearia battiscombei</i> R.E. Fr.	134	tree
Lamiaceae (=Labiatae)	<i>Pycnostachys</i> sp.	138	shrub
Loranthaceae	<i>Phragmanthera rufescens</i> (DC.) Tiegh.	124	shrub
Meliaceae	<i>Lepidotrichilia volkensii</i> (Gürke) J.-F. Leroy	96	tree
Myrtaceae	<i>Syzygium gerrardii</i> Hochst.	40	tree
Oleaceae	<i>Jasminum</i> sp.	122	climber
Orchidaceae	<i>Polystachya stauroglossa</i> Kraenzl.	71	herb
Poaceae	<i>Megastachya mucronata</i> (Poir.) P. Beauv.	126	grass
	<i>Miscanthus violaceus</i> (K. Schum.) Pilg.	93	grass
	<i>Pseudoechinolaena polystachya</i> (Kunth) Stapf	128	grass
Polygonaceae	<i>Rumex bequaertii</i> De Wild.	136	herb
Polypodiaceae	<i>Elaphoglossum acrostichoides</i> (Hook. & Grev.) Schelpe	137	herb
Ranunculaceae	<i>Clematis sinensis</i> Oliv.	110	climber
Rubiaceae	<i>Galium hamatum</i> A. Rich.	79	herb
Sapindaceae	<i>Allophylus macrobothrys</i> Gilg	28	tree
Urticaceae	<i>Elatostema monticolum</i> Hook.	58	herb
	<i>Laportea ovalifolia</i> (Schumach.) Dandy	53	herb
	<i>Pilea holstii</i> Engl.	101	herb
	<i>Pouzolzia parasitica</i> (Forssk.) Schweinf.	125	shrub

TABLE 8.—Usefulness of plant species

Species	Medicinal	Construction joinery & furniture	Craftwork	Food	Firewood	Miscellaneous
<i>Acalypha psilostachya</i>	+	-	-	-	-	+
<i>Adenia</i> sp.	-	+	-	-	-	-
<i>Alchemilla kiwuensis</i>	+	-	-	-	-	-
<i>Anigeria adolfi-fridericii</i>	+	-	-	-	-	-
<i>Anthericum</i> sp.	-	-	-	-	-	+
<i>Arundinaria alpina</i>	-	+	-	-	+	+
<i>Asplenium</i>						
<i>abyssinicum</i>	-	-	-	-	-	+
<i>aethiopicum</i>	-	-	-	-	-	+
<i>elliottii</i>	-	-	-	-	-	+
<i>erectum</i> var. <i>usambarense</i>	-	-	-	-	-	+
<i>inaequilaterale</i>	-	-	-	-	-	+
<i>linckii</i>	-	-	-	-	-	+
<i>Athyrium scandicinum</i>	-	-	-	-	-	+
<i>Basella alba</i>	-	-	-	-	-	+
<i>Brachystephanus coeruleus</i>	-	-	-	-	+	-
<i>Canthium oligocarpum</i>	-	+	+	-	-	-
<i>Capsicum annuum</i>	-	-	-	+	-	-
<i>Chenopodium</i>						
<i>ambrosioides</i>	+	-	-	-	-	-
<i>procerum</i>	+	-	-	-	-	-
<i>Clerodendrum</i> cf. <i>johnstonii</i>	-	-	-	-	-	+
<i>Coccinia mildbraedii</i>	+	-	-	-	-	-
<i>Connarus longistipitatus</i>	+	-	-	-	-	-
<i>Cordia millenii</i>	-	+	+	-	-	-
<i>Crassocephalum</i> spp. (2 spp.)	+	-	-	-	-	-
<i>Cyathea manniana</i>	-	+	-	-	-	-
<i>Cyathula cylindrica</i>	-	-	-	-	-	+
<i>Cyperus dereilema</i>	-	-	+	-	-	-
<i>Desmodium repandum</i>	+	-	-	-	-	-
<i>Dichrocephala integrifolia</i>	+	-	-	-	-	-
<i>Discopodium penninervum</i>	-	-	-	-	-	+
<i>Dombeya elliottii</i>	-	+	-	-	+	-
<i>Dracaena afromontana</i>	+	-	-	-	-	+
<i>Droguetia iners</i>	-	-	-	+	-	-
<i>Embelia schimperi</i>	+	-	-	+	-	-
<i>Ensete edule</i>	+	-	+	-	-	-
<i>Eriosema</i> sp.	-	-	-	-	-	+
<i>Ficus natalensis</i>	-	-	+	-	-	-
<i>Galiniera saxifraga</i>	-	+	-	-	+	-
<i>Helichrysum</i> sp.	-	-	-	-	-	+
<i>Illex mitis</i>	-	-	-	-	+	-
<i>Impatiens</i>						
<i>congolana</i>	-	-	-	+	-	-
<i>runssorensis</i>	-	-	-	+	-	-
<i>Ipomoea</i> sp.	-	+	-	-	-	-
<i>Lagenaria sphaerica</i>	+	-	-	-	-	-
<i>Maesa lanceolata</i>	+	-	-	+	+	-
<i>Macaranga kilimandscharica</i>	-	+	-	-	+	-
<i>Melchiora schliebenii</i>	-	+	+	-	+	-
<i>Mimulopsis runssorica</i>	-	-	-	-	+	+
<i>Mondia whitei</i>	+	-	-	-	-	-
<i>Momordica</i>						
<i>foetida</i>	+	-	-	-	-	-
<i>pterocharpa</i>	+	-	-	-	-	-
<i>Panicum trichocladum</i>	-	-	-	-	-	+
<i>Passiflora edulis</i>	-	-	-	+	-	-
<i>Peponium vogelii</i>	+	-	-	-	-	-
<i>Phyllanthus amarus</i>	-	-	-	-	-	+
<i>Piper capense</i>	+	-	-	-	-	-
<i>Plantago palmata</i>	+	-	-	-	-	-
<i>Plectranthus laxiflorus</i>	+	-	-	-	-	-
<i>Polygonum setosulum</i>	+	-	-	+	-	-
<i>Prunus africana</i>	-	+	-	-	-	-
<i>Psychotria mahonii</i> var. <i>puberula</i>	-	-	-	-	+	-
<i>Pteridium aquilinum</i>	-	-	-	-	-	+
<i>Rapanea melanophloeos</i>	-	-	+	-	+	-
<i>Sida veronicifolia</i>	-	-	+	-	-	-
<i>Smilax anceps</i>	-	-	+	-	-	-
<i>Solanum</i>						
<i>aculeatissimum</i>	-	-	-	-	-	+
<i>nigrum</i>	-	-	-	+	-	-
<i>Strombosia scheffleri</i>	-	+	-	-	-	-
<i>Thelypteris dentatus</i>	-	+	-	-	-	-
<i>Thunbergia mildbraediana</i>	-	-	-	-	-	+
<i>Urera hypselodendron</i>	-	-	+	+	-	-
<i>Vernonia</i>						
<i>adolphi-fridericii</i>	-	-	-	-	+	+
<i>auriculifera</i>	-	-	-	-	+	+
<i>cinerea</i>	-	-	-	-	+	+
<i>syringifolia</i>	-	-	-	-	+	+
<i>Xymalos monospora</i>	-	+	+	-	+	-

+ useful; - not useful.



FIGURE 3.—A handbag made from vegetative parts of *Ureia hypselodendron* and seeds of *Ensete edule* being sold in a shop in Bundibugyo town (26-9-91).

Vasquez *et al.* (1990) dealing with trees only, found that 60.1% of them were useful to the San Rafael community of northern Peru. These authors dealt with a larger number of tree species and individuals over a larger sample area than ours. However, our area appears to have a greater plant species richness.

The medicinal plants *Maesa lanceolata* and *Mondia whitei* which are used by the Bakonjo and Baamba as a remedy for stomachache and other bodily pains and increasing sexual potency in man, are also reported to be extensively used by the Zulu (Cunningham 1990) without mention of the purpose for which they were employed. *Piper capense*, *Plectranthus laxiflorus*, *Polygonum setosulum*, *Desmodium repandum*, *Crassocephalum* spp., *Dracaena afromontana*, *Momordica foetida*, *M. pterocarpa* and *Lagenaria sphaerica* were found to be used for medicinal purposes by the Bakonjo and Baamba people during this study. On the other hand, while species belonging to the genera *Acalypha*, *Asplenium*, *Phyllanthus* and *Syzygium* are used in a variety of non-medicinal ways by the Bakonjo and Baamba in Uganda, the Siberut of Indonesia and people of western Nigeria (Adjanohoun *et al.* 1990) use some species of the same genera specifically as medicinal plants (Wanda 1990). Whereas *Helichrysum* sp. is only used for carrying luggage by the Bakonjo and Baamba, it is a traditional Zulu medicinal plant (Cunningham 1990).

The most extensively exploited species was *Arundinaria alpina* (bamboo). Mostly dry or dead bamboos were harvested and used for construction of walls, roofs of houses and granaries by the Bakonjo and Baamba. Only a few species were actually shaped into planks because of the very difficult terrain or unavailability of modern equipment for saw milling. These species included *Cordia mellinii*, *Strombosia scheffleri*, *Cyathea manniana*. *Cyathea manniana* is known to be particularly resistant to attacks by termites.

Production of craftwork is becoming a fairly lucrative activity among the Bakonjo and Baamba. Some beautiful bags (Figure 3) made from vegetative parts of *Ureia hyp-*

selodendron and seeds of *Ensete edule* are very marketable in many craftshops and other commercial outlets in Uganda. *Rapanea melanophloeos* (L.) Mez is used for craftwork by the Bakonjo and Baamba, whereas in the Kwa-Zulu-Natal region, it is a medicinal plant (Cunningham 1990).

Table 8 is a list of plant species and the variety of ways in which each species is used by the Bakonjo and Baamba. Only 5.2% (4/77) plant species are used for three different purposes. For instance *Maesa lanceolata* is used as medicinal plant, food and firewood. *Melchiora schliebenii* and *Xymalos monospora* are both used for construction/timber production, craftwork and food. Plant species used for two purposes, made up 22.1% (17/77) of the useful plant species and those with only one application made up 72.7% (56/77).

The degree of usefulness of families indicated in Table 9 shows that only Euphorbiaceae and Myrtaceae, 4.8% (2/42), had species put to four categories of use by the Bakonjo and Baamba; 11.9% (5/42) of the families have species put to three categories of use; 28.6% (12/42) to two categories of use; and 52.4% (22/42) families to one category of use. Representatives of 14 families were used medicinally, 13 families for construction, joinery and furniture and 12 for craftwork. Species of six families, the lowest number, were collected as food by the Bakonjo and Baamba. There were 15 families with no economic value to the Bakonjo and Baamba (Table 10).

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TABLE 9.—Degree of usefulness of families

Family	Medicinal	Construction, joinery & furniture	Craftwork	Food	Firewood	Miscellaneous
Acanthaceae	-	-	-	-	+	+
Agavaceae	-	-	-	-	-	+
Amaranthaceae	-	-	-	-	-	+
Aquifoliaceae	-	-	-	-	+	-
Asclepiadaceae	+	-	-	-	-	-
Aspleniaceae	+	-	-	-	+	+
Asteraceae	-	-	-	+	-	-
Balsaminaceae	-	-	-	+	-	-
Basellaceae	-	-	-	-	-	+
Boraginaceae	-	+	+	-	-	-
Chenopodiaceae	+	-	-	-	-	-
Connaraceae	-	-	+	-	-	-
Convolvulaceae	-	+	-	-	-	-
Cucurbitaceae	+	-	-	-	-	-
Cyatheaceae	-	+	-	-	-	-
Cyperaceae	-	-	+	-	-	-
Dennstaedtiaceae	-	-	-	-	-	+
Euphorbiaceae	+	+	-	-	+	+
Fabaceae	+	-	-	-	-	+
Liliaceae s.l.	+	-	-	-	-	+
Malvaceae	-	-	+	-	-	-
Monimiaceae	-	+	+	-	+	-
Moraceae	-	-	+	-	-	-
Musaceae	+	-	+	-	-	-
Myrtaceae	+	-	+	+	+	-
Olaceae	-	+	-	-	-	-
Passifloraceae	-	+	-	+	-	-
Piperaceae	+	-	-	-	-	-
Plantaginaceae	+	-	-	-	-	-
Poaceae	-	+	-	-	+	+
Polygonaceae	+	-	-	+	-	+
Polypodiaceae	-	-	-	-	-	+
Rosaceae	+	+	-	-	-	-
Rubiaceae	-	+	+	-	+	-
Sapotaceae	-	+	+	-	-	-
Smilacaceae	-	-	+	-	-	-
Solanaceae	-	-	-	+	-	+
Sterculiaceae	-	+	-	-	+	-
Theaceae	-	+	+	-	-	-
Thelypteridaceae	-	-	-	-	-	+
Urticaceae	-	-	+	+	-	-
Verbenaceae	-	-	-	-	-	+

+ useful; - not useful.

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TABLE 10.—Plant families with no economic value to the Bakonjo and Baamba

Amaryllidaceae	Lamiaceae (= Labiatae)
Apiaceae	Meliaceae
Brassicaceae (= Cruciferae)	Myrsinaceae
Campanulaceae	Oleaceae
Celastraceae	Orchidaceae
Combretaceae	Ranunculaceae
Commelinaceae	Sapindaceae
Flacourtiaceae	

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