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MPANGA FOREST SITE REPORT: THIRD VISIT - 2004

By

Members of Uganda Forestry Resources and Institutions Center (UFRIC)

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TABLE OF CONTENTS

		Pages
	Acknowledgement	4
1.0	INTRODUCTION	5
1.1	Location of the sites	5
1.2	Objectives of the study	5
2.0	DATA COLLECTION METHODS	6
2.1	General	6
2.2	Forest sampling method	6
2.3	Socio-economic data	7
3.0	RESULTS AND DISCUSSIONS	7
3.1	Forest Condition: Forest data	7
3.1.2	General comments on Mpanga Forest Reserve	9
3.1.2.1	Forest Improvement in Mpanga Forest Reserve	10
3.1.3.2	Other general observations	11
3.2	Major changes in the settlement and the forest resources	12
3.3	User groups	15
3.3.1	General Information	15
3.3.2	Description of the Usergroup	15
3.3.2.1	Men of Mpanga	15
3.3.2.2	Women of Mpanga	16
3.3.2.3	Children of Mpanga	17
4.0	Policy and Legislation	17
5.0	Forest Governance	18
6.0	Problems faced by Mpanga Forest Reserve	18
7.0	Forest Status	19
8.0	Conclusions	19
LIST OF FIGURES		
Fig. 1	One of the several water points in Mpanga Forest Reserve	7
Fig. 2	Natural regeneration in previously encroached areas of Mpanfa Forest	8
Fig. 3	Mushroom harvesting in Mpanga Forest by the Local Communities	10
Fig. 4	Changes in trees of Mpanga Forest	
Fig. 5	Changes in saplings of Mpanga Forest	

List of Tables

		Page
Table 1.	Projected stem count and species richness in Mpanga Forest Reserve	9

List of Appendices

		Page
Appendix 1:	Master species list of Mpanga Forest Reserve – 2004 visit	22

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1.0 INTRODUCTION

1.1 Location of the sites

Mpanga Site consists of Mpanga Forest Reserve. The forest is a research forest; therefore the use of the forest by the surrounding communities is principally non-timber use. Two settlements, Ndugu and Namigade, were studied as user settlements. The forest is located in Mpigi District, 24 miles along the Masaka-Kampala road. This report detail the information captured during the third visit to the same forests, the first and second revisit having been done in 1994 and 2000 respectively.

The history of this forest, its use, past research effort are documented by Gombya *et. al* 1994 and Gombya *et. al* 2000. During the 1994 visit, no evidence of timber harvesting was recorded. However, during the 2000 revisits, evidence of timber harvesting was noted in two isolated locations in the northern part of the forest.

1.2 Objectives of the study

This is one of the 25 UFRIC sites in Uganda. The overall goal of UFRIC is to study and monitor the impact of institutional arrangement and incentives on forest resources in East Africa. UFRIC is a Collaborative Research Center in Uganda. The others are CRC-Kenya in Kenya and TZ-CRC in Tanzania

For this study, the specific objectives were:

- ◆ Assess changes in the condition of Mpanga Forest Reserve and local people's livelihoods since the last visit
- ◆ Document the alternative sources of timber and drum products since the forest is purely a research forest.
- ◆ Evaluate local communities dependency on these forests by valuing and quantifying the different products that are harvested from the forests

2.0 DATA COLLECTION METHODS

2.1 General

As in the previous visits, IFRI data collection instruments and methodology were used during the data collection process. This included gathering information using the site overview, settlement, forest, forest plots, user groups, forest products, forest-user group relationships, organizational inventory and inter-organizational arrangements forms.

The forest is 453 hectares. In order to sample the representative sections of the reserve, the forest was first ground surveyed and as during the second revisit, six strata, based on location, management activities, vegetation type, encroachment, past research activities, and human settlement distribution were identified and sampled. To obtain an estimate of the plant species present, their size, densities and abundance, approximately 0.9 hectare of the forest was sampled in 30 randomly selected forest plots located in the different strata. The information obtained may be used in future to calculate a) biodiversity indices, b) estimate the availability of trees, sapling, and seedlings, or c) evaluate the forest for either teaching, conservation and research purposes. Being the third visit by the IFRI team, this information may be used for comparison with the information collected during the first visit and the second revisit.

2.2 Forest sampling method

2.2.1 Reconnaissance

Fieldwork started with a survey of the forest external boundary by the entire research team. Geographical Positioning System (GPS) positions at corner points were compared to those captured during the second revisit in 2000. Universal Thematic Mapper (UTM) format was used for recording the position. In sampling the forest, the team tried as much as possible to sample the plots previously sampled. But because of the forest crown cover the GPS readings were not registered. Therefore, the team estimated previous positions after consultation amongst the team members.

2.3 Socio-economic Data

Socio-economic data about Ngugu and Namigadde settlements and their inhabitants was collected from both primary and secondary sources. Primarily, interviews/discussions and Participatory Rural Appraisals (PRA) were conducted at the home of the LC 1 chairperson's home located within the settlements. Both women, children, men and LC officials attended the PRAs. In total, the attendance was of good as the visit coincided with a dry spell that had rendered people less active in agricultural activities. Discussions mainly focused on general information such as the socio-demographic, produce harvested and occupational structure of the residents in the settlement and their previous and current use of the forest resource. Secondary sources included use of recorded information available with key informants (village officials), especially about the management history of the forests and the population of the two settlements. Information about the changes in the forest and the community were investigated as well.

3.0 RESULTS AND DISCUSSIONS

3.1: Forest Condition: Forest data

3.1.1 The General Condition of the Forest

The official boundary of Mpanga Forest Reserve has generally not changed although the encroached areas recorded during the 2000 revisit had recovered. Also, the Pine plantation area that was harvested by the 2000 revisit had recovered with several natural regeneration species recorded.

Mpanga Forest Reserve (MFR) is one of the few government reserves that is well managed in Mpigi District. A cross-section of large. pole, saplings, and seeding species are present. The external boundary is clearly marked with comer Cairns and access to these comer positions is relatively easy. The forest is a strict Nature Reserve (SNR) and this may have contributed to the forest protection and conservation. The research status of the forest and planting of parts of the forest (with *Araucaria* sp. *Pinus* sp., *Burtydevia nyasica* and *Cedrella odorata*) through enrichment planting may have contributed to the present forest condition.

The forest has many permanent water points and the introduced ecotourism activities, though still in the initial phase appears to favor and promote the good forest.



Figure 1: One of the water points in Mpanga Forest Reserve

In addition, agricultural encroachers, which was found during the 200 revisit was not recorded. In the previously encroached areas, there was adequate regeneration of native species (Figure 2).



Figure 2: Natural regeneration in the previously encroached agricultural area

3.1.2 General Comments on Mpanga Forest Reserve

The total tree count in Mpanga Forest Reserves had increased since the second revisit in 1994 (from 193 to 118). Within the 30 forest plots, there were 90 plant species (Appendix1) compared to 65 tree species recorded in 2000 and 73 species recorded during the first visit, 1994.

The sapling density slightly increases, from 202 in 2000 to 222 in 2004. During the first visit in 1994, there were 245 saplings (Table 1). A total of 130 seedlings were recorded in the groundcover. The observations recorded no tree cutting. The average number of trees per plot had slightly increased, tree DBH showed an increase from the second revisit (Table 1). The most dominant species were *Lovoa brownii* (Nkoba) *Maesopsis eminii* (Musizi) *Bosquiea phoberos* (Mugwi); *Antiaris toxicaria* (Kirundu) *Pycnanthus angolense* (Lunaba) and *Macaranga* sp. (Mwokyanyama)

Table 1: Projected stem counts and richness in Mpanga Forest Reserves

	First visit		Second visit		Third visit	
	Saplings	Trees	Saplings	Trees	Saplings	Trees
Total Stem Count	319	251	257	214	270	225
Projected Stem Count/ha	1079	4083	872	3487	915	3661
Species Richness	130	96	124	73	125	84
Mean DBH (cm)	8	35	6	30	6	31
Mean Height (m)	6	17	5	15	5	15
Mean basal area/ha (m ²)	0.3	10	0.2	8	0.4	9
Mean volume/ha (m ³)	1	247	1	211	1	221

The largest tree species were still *Piptadeniastrum africana* – Mpewere (DBH 126 cm and height 28m); *Canarium schweinfurthii* - Muwafu (DBH 95 and height 25, *Trichilia dregeana*-Sekooba (DBH 66 and height 25and *Pseudospondias microcarpa*-Muziru (DBH 83 and height 18). An average of 8 tree stems per sampled plot was recorded with an average DBH of 32.8 and an average height of 19.3 were recorded. A projected density of 3661 stems per hectare was estimated compared to 4083 and 3487 for 1994 and 2000 respectively (Table 1).

An average of 9 saplings per plot was recorded. This record was the highest compared to the previous two visits. However, there was a general increase in the average DBH and average height growth in the forest. The forest showed recovery compared to the 2000 revisit. This evidence corroborates with the PRA information indicating an increase in the strict nature of forest management by National Forest Authority (NFA).

3.1.2.1 Forest Improvement in Mpanga Forest Reserve

Mpanga is a research forest. There is no forest improvement being carried in the forest. Furthermore, the rural community is not yet encouraged to participate in improving the forest resource. There is a deliberate attempt to protect the forest and encouraging the local communities to plant their own woodlots on their land. However, the harvesting of firewood for domestic use, collection of water, medicines and forest foods, such as mushroom were recorded. Figure 3 shows an example of mushroom collected by the local community during the visit.



Figure 3: Mushroom collection in Mpanga Forest Reserve

3.1.3.2 Other general observations for Mpanga Forest Reserve

The results show that the vegetation cover slightly decreased between the first and second visit, but increased between the second and third visit. Figure 3 shows the changes in tree parameters in the three visits, while Figure 4 shows the changes in the sapling parameters.

Where as the trees were consistently showing a slight decrease during the second revisit, there was a sharp difference in the saplings, especially in the species richness category.

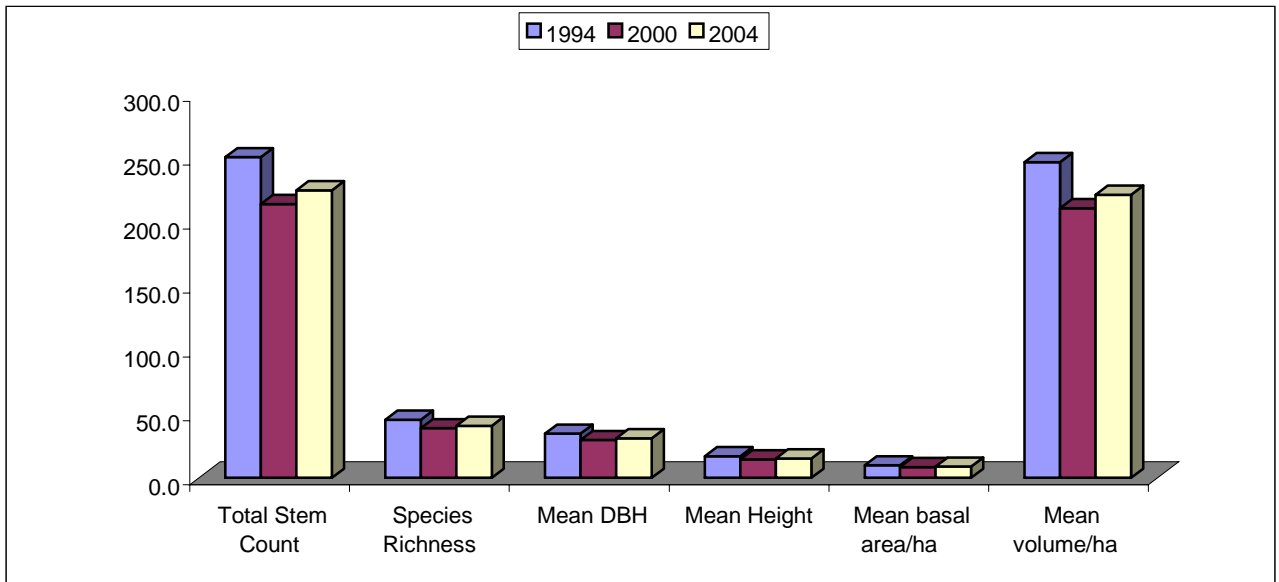


Figure 4: Changes in trees of Mpanga across the three visits

What is observed in Fig. 4 is that there was a decrease in the total tree count and projected volume per ha during the second revisit compared to the first and third visits. This trend of decrease is also noticed in the general forest species richness, mean DBH, mean height and basal area. During the third visit, the results show a marked increase in all the tree parameter

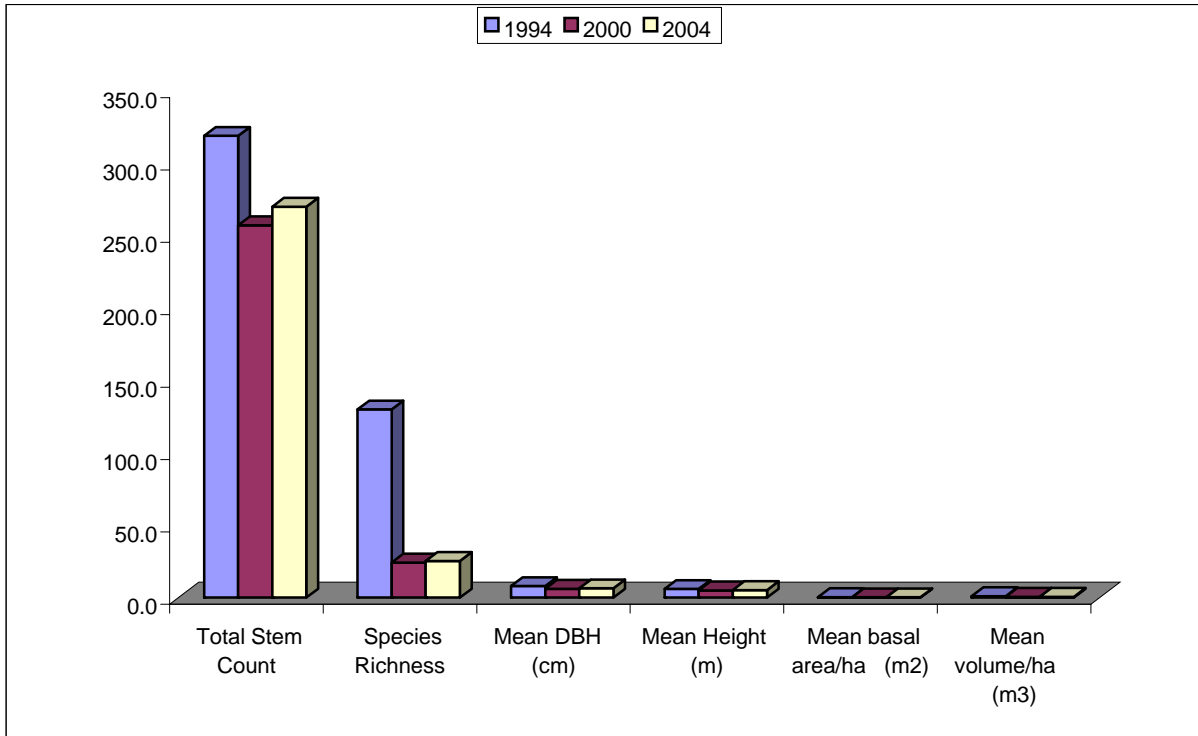


Figure 4: Changes in saplings across the three visits

Figure 4 above suggests a marked decrease in the saplings during the second revisit, but a gradual increase during the third visit. The natural regeneration in the previously encroached areas and the recovery in the harvested Pine plantation may be explaining this phenomenon.

3.2 Major changes in settlements and forest resources

3.2.1 Nakigudde Settlement

There has been an increase in the population of the settlement. This has been attributed to increased births in the area in addition to immigration from different parts of the country.

The number of households has also increased. This is probably due to the fact that as individuals grow up, they become independent hence setting up their own homes. Furthermore, there has been increased immigration in the area. There is increased scarcity of food in the settlement as a result of the reduction in the rains that are received in the area.

There is a reported reduction in the availability of some forest products such as mushrooms.

There is a change in economic activities from drum-making, especially by men, to brick-making, livestock keeping, collecting water for poultry owners and hiring out labour. This is

attributed to the increased restrictions on accessing the forest. However, drum making still remains a main economic activity in the area as evidenced by the presence of make selling outlets for drums along the Masaka-Kampala highway that goes through the settlement. There is an improvement in economic growth as manifested by the presence of more permanent house structures and small businesses in the area.

Drum making is no longer is a sustained economic activity in Nakigudde settlement
The standard wage labour rate per day has increased from UgShs. 1000 for both men and women in 2000 to UgShs. 15000 and 2000 for women and men respectively in 2004.

3.3 User groups

3.3.1 General Information

The term user group refers to a group of people who harvest from, use and/or maintain a forest and who share the same rights and duties to products from a forest(s), even though they may not be formally organized. For all the user groups, none of the groups was self-consciously formed. The users have similar rights, which are either *de facto* (for the user groups harvesting for subsistence purposes) or bought from the owner (for the commercial user groups). All the individuals in the user groups live permanently in the settlement at an average distance of 1 km from the forest. There are nearly no cases of conflicts amongst the user groups. Most of the individuals in the settlement are tenants. Wealth was defined as having a house, children and livestock in addition to a motorbike as a means of transport. 60 percent of the individuals in the settlement regard themselves as wealthy in conformance to the above definition.

3.3.2 Description of the user groups

There were two user groups that were identified in Nakigudde settlement. These included:

1. Men of Nakigudde
2. Women and Children of Nakigudde

In comparison with the last visit, the Drum-Makers of Nakigudde, which was a user group, is no longer recognized as a user group. This is because of the increased restrictions on access to Mpanga Forest Reserve that has left, especially the men, with no other option but just to abandon drum making as a result of the scarcity of frames for drum making.

3.3.2.1 Men of Nakigudde

This user group consists of men who utilize Mpanga Forest Reserve for both consumptive and non-consumptive uses. The consumptive uses include harvesting of products such as mushrooms, medicines and clay as the major products. The user group is unique in that it is only meant to harvest those products from the forest for domestic purposes, although sometimes individual members sell some of the products. The user group is identifiable without formal organization. This user group has changed in that it has grown in number in addition to changes in ethnic composition. It consists of about 169 individuals with about 160 households. Baganda are the most dominant ethnic group (80%) followed by Banyankole (10%) and Banyarwanda (10%) while Catholics are the most dominant religious group (60%) followed by Protestants (30%) and Moslems (10%). Furthermore, some products that used to be collected like tree trunks for drum making can no longer be got from the forest due to the strict enforcement that has been put in place by National Forestry Authority. As a result, there is reduced participation of individuals in drum making.

The occupational structure of individuals in the user group is such that most of them (90%) are subsistence farmers, producing usually surplus which they sale. Other activities being engaged in include livestock and poultry keeping, brick making and hiring out of labour. There are basically no households that are depending on the forest for income generation because of the increasing enforcement of rules and monitoring of forests by National Forestry Authority.

3.3.2.2 Women and Children of Nakigudde

This user group consists of women who Mpanga Forest Reserve for consumptive uses. These uses include harvesting of products such as water, firewood and medicine. The user group is identifiable without formal organization. This user group has changed in that it has grown in number in addition to changes in ethnic composition. It consists of about 200 individuals with about 210 households. Baganda are the most dominant ethnic group (70%) followed by Banyankole (15%) and Banyarwanda (10%) while Catholics are the most dominant religious group (60%) followed by Protestants (30%) and Moslems (10%). The user group has also focused on utilizing the forests for commercial purposes through harvesting *Marantochloa sp* (Njulu) that is used for making baskets that are sold in the near by market. The quantity of products being harvested from the forest has also reduced, as manifested by the long distances that have to be moved in order to reach the harvesting points in the forest. Furthermore, there are restrictions on accessing some of the products from the forest.

The group consists of mainly subsistence farmers with little surplus for sale. Most of the individuals depend on the forest for crafts materials to earn them a living in addition to petty trading. The most common combinations of occupations include petty trading with farming and crop cultivation with livestock rearing.

3.3.2 *Ndugu Settlement*

Ndugu settlement is one of the settlements with residents utilizing Mpanga Forest Reserve that has just been added to the study site. It was not possible to state the changes in the settlement since it is the first visit to that site. However, it can be stated that Ndugu has a relatively high population that is consisting of mainly depending on the forest for both commercial and domestic purposes. The main user groups identified in Ndugu settlement include:

1. Men of Ndugu
2. Women of Ndugu

Men of Ndugu

The men of Ndugu utilize the forest for water, firewood and trees used for drum making. They are however faced with a problem in that with the coming in of NFA, there are strict restrictions on accessing trees for drum making from the forest reserve. This has created a big rift between the residents of Ndugu and NFA staff, which is forcing NFA staff to use guns in enforcement activities. The use of guns has, however, been met with a lot of hostility amongst the residents, who are now threatening to cause harm to the NFA staff.

Women of Ndugu

Women of Ndugu utilize the forests for water, mushrooms and *Marantochloa sp* (Njulu). These are mainly for domestic purposes, although some materials are used to make crafts for sale in order to generate incomes. They are also faced with a problem in that they now have restricted

4.0 Forest Governance

The role of governing the forest is under the National Forest Authority (NFA). No other person apart from the landlord and his representatives make rules regarding the forest use. The rules related to harvesting the various products have evolved over a long period of time and there are no stories about their origins. Since the forest is Government owned, the rules relating to harvesting and processing of the various forest products are governed by the Forest Act. It should however be followed that some of these rules are not followed. This is because of the inability to enforce the rules. Furthermore, officials of both National Forestry Authority and District Forestry Services are not yet firm on the ground and to formally who is supposed to do what. Both NFA and DFS are new creations and still in their initial phases.

5.0 Problems Faced by Mpanga Forest Reserve

The individuals feel that the type of conservation measures adopted in relation to this forest are too strict. The Usergroups identify serious problems that they and those responsible for managing the forest may face during the next five years. These problems include:

- Increased conflict in resource use especially drum and firewood.
- Access paths passing in the forest are frequently changed. These are affecting th distance children travel while going to school.
- Lack of cooperation between the community and National Forest Authority Staff.

6.0 Conclusions

The following conclusions are drawn from the visit

1. The tree, sapling and groundcover condition of the forest has improved compared to the second revisit in 2000
2. There was no timber harvesting and charcoal burning observed in the sampled plots of the forest. The abandoned garden and the harvested Pine plantation had recovered with sufficient stock of natural regeneration.
3. The population in the settlement studied had significantly increased due to births and immigration.
4. The Management of the forest has become more restrictive under the NFA compared to when it was under the Forest Department (FD)

Appendix 1

Master Species List 2004: Mpanga Forest Reserve

1.	<i>Acacia hockii</i>	Kasaana
2.	<i>Albizia coriaria</i>	Mugavu
3.	<i>Albizia zygia</i>	Nongo
4.	<i>Alchornea cordifolia</i>	Luzibaziba
5.	<i>Alchornea schweinfurthii</i>	Unknow
6.	<i>Allophyllus macrobotrys</i>	Unknown
7.	<i>Ananas sativa</i>	Nanansi
8.	<i>Antiaris toxicaria</i>	Kirundu
9.	<i>Antidesma laciniatum</i>	Kafuluma
10.	<i>Argomuelleria macrophylla</i>	Nkusakusa
11.	<i>Artocarpus heterophyllus</i>	Ffene
12.	<i>Blighia unijugat</i>	Nkuzanyana
13.	<i>Bosqueia phoberos</i>	Mugwi
14.	<i>Bridelia micrantha</i>	Katazamiti
15.	<i>Canarium schweinfurthii</i>	Muwafu
16.	<i>Canthium volgaris</i>	Kabajansamu
17.	<i>Celtis durandii</i>	Namununka
18.	<i>Clausena anisata</i>	Musokolindo
19.	<i>Coffea canephora</i>	Mwanyi
20.	<i>Commelina sp</i>	Nanda
21.	<i>Conyza floribunda</i>	Kafumbe
22.	<i>Croton megalocarpas</i>	Nkulumire
23.	<i>Cymbopon sp</i>	Teete
24.	<i>Cynodon sp</i>	Lumundi
25.	<i>Dictyandra arborescens</i>	Mubambanjobe
26.	<i>Diospyros abyssinica</i>	Mpimbi
27.	<i>Dovyalis microcalyx</i>	Unknow
28.	<i>Dracaena fragrans</i>	Luwaanyi
29.	<i>Ekebergia senegalensis</i>	Mutwalabafu
30.	<i>Erythrina abyssinica</i>	Jjirikiti
31.	<i>Fagara angolense</i>	Munyenye
32.	<i>Fagara lepreurii</i>	Munyenye
33.	<i>Ficus urceolaris</i>	Kitonto
34.	<i>Ficus exasperata</i>	Luwawu
35.	<i>Ficus stipulifera</i>	Unknow
36.	<i>Ficus thoningii</i>	Unknown
37.	<i>Funtumia africana</i>	Namukago
37.	<i>Garcinia huillensis</i>	Musaali
38.	<i>Harungana madagascariensis</i>	Mulirila
39.	<i>Holoptelea grandis</i>	Mumuli
40.	<i>Imperata cylindrica</i>	Ssenke
41.	<i>Lantana camara</i>	Kayukiyuki
42.	<i>Laudetia kagerensis</i>	Lukuli

42.	<i>Leonotis nepetifolia</i>	Kifumufumu
43.	<i>Leptacrium sp</i>	Unknown
44.	<i>Leptapsis cochleata</i>	Unknown
45.	<i>Lovoa brownii</i>	Nkoba
46.	<i>Macaranga lancifolia</i>	Mwokyanyama
47.	<i>Macaranga monandra</i>	Mwokyanyama
48.	<i>Maesa laceolata</i>	Kiwondowondo
49.	<i>Maesopsis eminii</i>	Musizi
50.	<i>Majidea fosteri</i>	Munda
51.	<i>Mangifera ndica</i>	Muyembe
52.	<i>Manhot esaculenta</i>	Muwogo
53.	<i>Momodic foetida</i>	Bombo
54.	<i>Morinda lucida</i>	Kabajjansai
55.	<i>Musa cultiva</i>	Kitooke
56.	<i>Olaila latifolia</i>	Lumondi
57.	<i>Oxyanthus speciosus</i>	Kamwanyimwany
58.	<i>Panicum maximum</i>	Mukonzikonzi
59.	<i>Parkia filicoides</i>	Jjoge
60.	<i>Phoenix reclinata</i>	Mukindikindu
61.	<i>Phyllanthus margeritaria</i>	Kamenyambazi
62.	<i>Phyllanthus capilaris</i>	Mutunuka
63.	<i>Piptadeniastrum africanum</i>	Mpewere
64.	<i>Pittisporum maii</i>	Nabuluka
65.	<i>Polycious fulva</i>	Setaala
66.	<i>Pseudospondias macrocarpa</i>	Muziru
67.	<i>Pycnanthus angolensis</i>	Lunaaba
68.	<i>Rhus volgaria</i>	Kakansokanso
69.	<i>Rothmania urcelliformis</i>	Unknown
70.	<i>Sanserveria dawei</i>	Bugoogwa
71.	<i>Sapium ellipticum</i>	Musasa
72.	<i>Scolopia rhanophylla</i>	Nkanaga
73.	<i>Securinega virosa</i>	Lukandwa
74.	<i>Selcia ellegans</i>	Unknown
75.	<i>Solanum gigantum</i>	Setaaba
76.	<i>Syanthea sp</i>	Kayongo
77.	<i>Synzygium cordatum</i>	Kalunginsanvu
78.	<i>Teclea nobilis</i>	Nzo
79.	<i>Teclea nobilis</i>	Nzo
80.	<i>Treculia africana</i>	Muzinda
81.	<i>Trema orientaris</i>	Kisiisa
82.	<i>Trichilia dregeana</i>	Sekkoba
89.	<i>Triumphetta rhombodea</i>	Luwugula
90.	<i>Vernonia amygdalina</i>	Mululuza